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THE SOUTHERN NEW ENGLAND TELEPHONE COMPANY

CONNECTICUT INDUSTRY

NOVEMBER • 1958

VOLUME 36 NUMBER 11

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Published monthly by the Manufacturers Association of Connecticut, Inc., with executive offices at 928 Farmington Avenue, West Hartford, Connecticut. Entered as second-class matter January 29, 1929, at the post office at Hartford, Connecticut, under the Act of March 3, 1879. As the official magazine of the Manufacturers Association of Connecticut, Inc., it carries authoritative articles and notices concerning the Association activities. In all other respects the Association is not responsible for the contents nor for the opinion of its writers. Subscription rates: one year \$3.00; 30¢ a copy. Subscribers should notify publisher promptly of changes in address. Advertising rates on application.



THIS MONTH'S cover photos show guests assembled at the Yale Dining Hall for the evening session of the Association's Annual Meeting on September 9, 1958.

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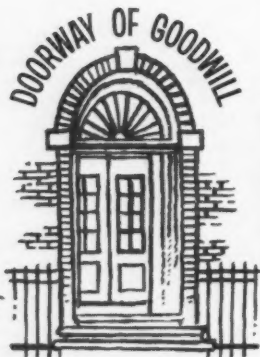
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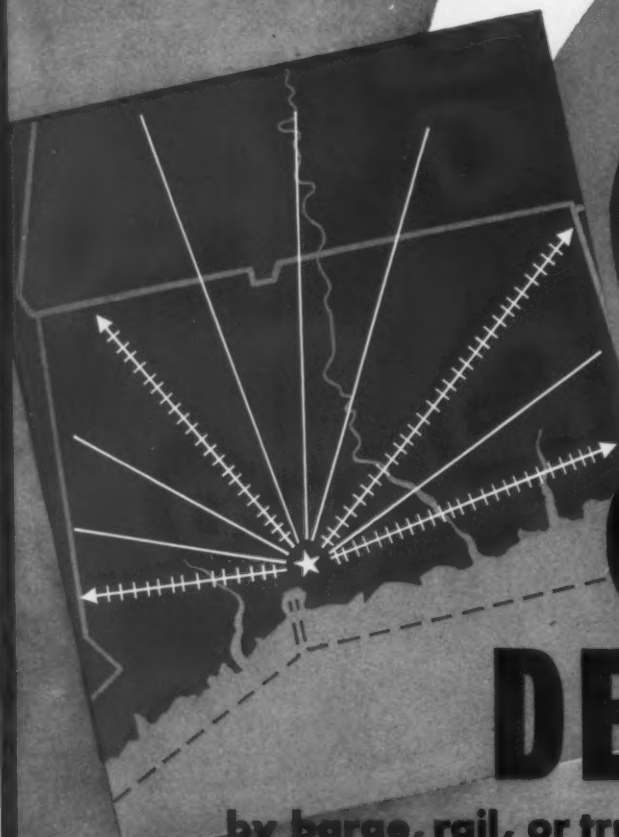
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Union Immunities*

♦ SEVERAL months ago this newspaper printed a condensation of a booklet entitled, "Legal Immunities of Labor Unions," written by Dr. Roscoe Pound, former dean of Harvard Law School, and published by the American Enterprise Association, Inc., of Washington, D.C. In that essay Dr. Pound listed labor's immunities and noted how they endanger the rights of property of both employer and public.

In practice these immunities include: The reluctance of courts to look upon crimes—committed during labor disputes by labor operatives—as crimes, per se; the refusal of unions to become legally responsible organizations by incorporating and so becoming legally tangible entities; and the practice of committing all matters affecting labor organizations to an administrative agency instead of confining the agency's jurisdiction to matters involved in employer-employee relationship.

To illustrate such immunities, consider first the fact that no effective legal action can be secured against unions as such for interference by pickets with travel on streets and highways, destruction by pickets of property and other such common occurrences during strikes. As Dr. Pound writes, "The members of a union are not its agents and the union is not liable for the acts of its members in the course of a labor dispute." Yet, "the employer is held for what his agents and employees do in the course of their employment."

The legal irresponsibility of unions is exemplified by their ability to break contracts by striking for reopening of talks even though a provision in the contract prohibits it. In one case when this happened the company sued for damages. Yet the court held that the best interest of all parties would be served if the question of damages for the three weeks' stoppage was eliminated, "to avoid the regeneration of antagonisms that finally have been dissipated." In other words, the union can break a contract with impunity in order that there will be no hard feelings.

The practice of turning over all kinds of cases affecting organized labor to an administrative agency, the National Labor Relations Board, has further strengthened unionism's power. Whereas other regulatory agencies are supposed to function to protect the public, the N.L.R.B. has habitually operated with the apparent aim of protecting organized labor alone.

But more than anything else, organized labor owes its unique position of power to its immunity from antitrust laws which prohibit monopolistic combinations and agreements in restraint of trade. It is just such combinations and agreements which provide big labor with its lethal punch.

Several unions, such as Walter Reuther's United Auto Workers, control the manpower in entire industries. For all practical purposes, one word from Mr. Reuther can close every auto factory in America. No human being outside the labor movement has such power. Even an attacking enemy would be hard put to so thoroughly cripple the nation. That unions not only have this power but use it at will is exemplified by the industry-wide steel strikes in recent years—one of which came at the height of the Korean War.

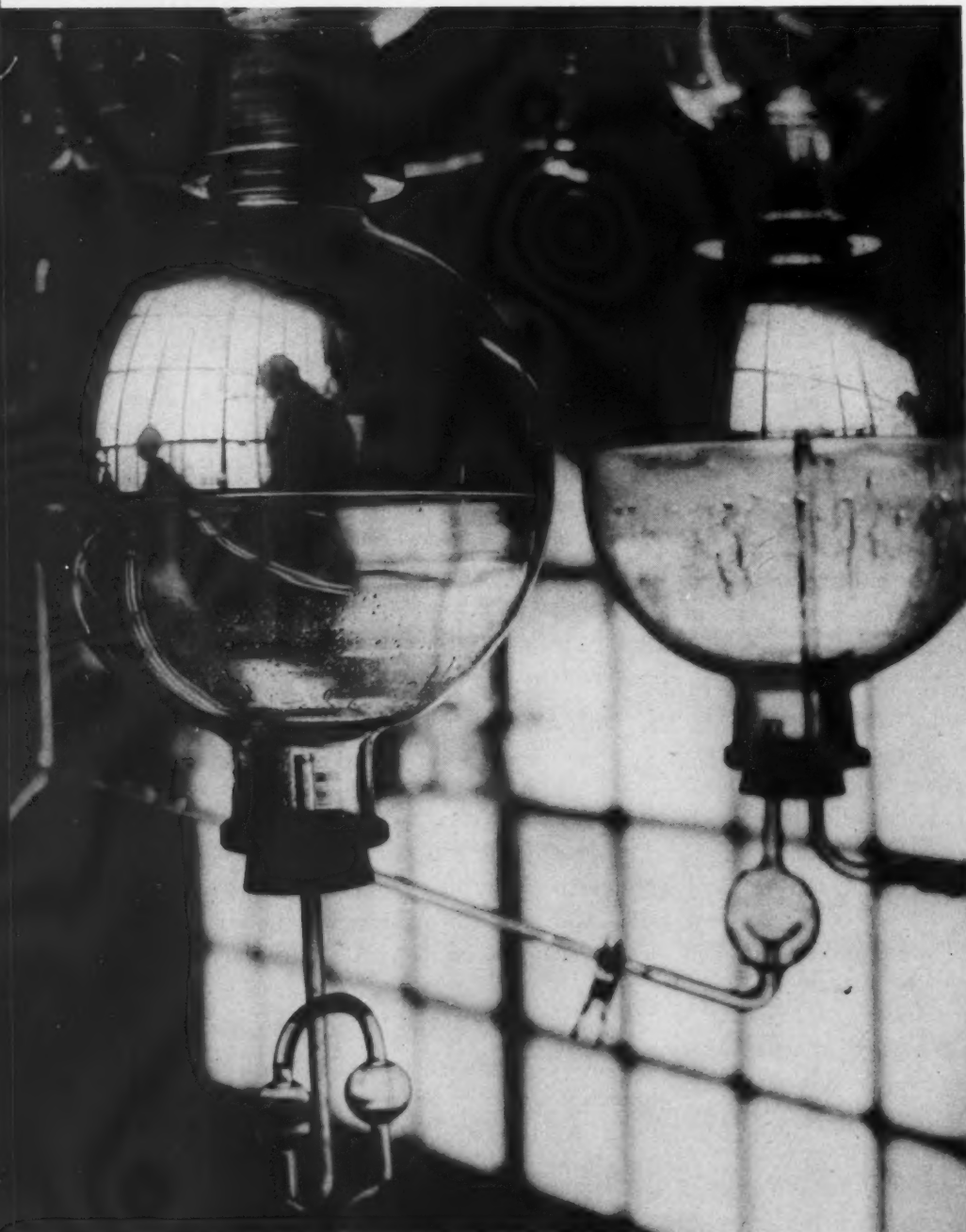
If organized labor were brought under antitrust laws could it still bargain effectively for the workers? It is obvious that it could. Local unions could still bring tremendous pressure on individual companies, and could bring this pressure without jeopardizing whole industries and the national security.

As there is no question about the permanence of an articulate labor movement on the national scene, so there can be no doubt that excessive power in the hands of unionism is a threat to the well-being of the nation. The answer to the problem lies in action by Congress to limit that power. For it was Congress in the first place that permitted unions to menace the nation's welfare by granting them immunity from the nation's laws.

*An editorial reprinted from the Wall Street Journal by permission of the publishers.

Research in Chemistry . . .

As done at the Stamford Research Laboratory
creates new products, processes and new uses



Research takes place primarily in the scientist's mind and later is tested in the beakers and assorted equipment of the laboratory. This purposely inverted photograph catches a reflection of a scientist at work, the first step in helping America make better use of its resources through chemistry. (Right) Distillation, the purification and refinement of chemical substances as well as ideas, is both symbolic and basic to research and advancement in chemistry.



laboratory American Cyanamid
new uses established products



■ "It is my opinion that the world is facing certain starvation unless we can find new and abundant sources of nitrogen for use in fertilizing the croplands of the earth . . ."

So spoke an eminent British scientist, Sir William Crookes, some seventy years ago as population figures continued to increase in the face of dwindling natural sources of nitrogen in the earth.

Unknown to Crookes at the time, the answer had been found. It had been found by two German scientists who developed the "Frank-Caro" process for taking nitrogen out of the air to make synthetic fertilizer.

Unknown to Drs. Frank and Caro, their process was to be the basis for the founding of American Cyanamid Company. Once a small organization with one plant and one product, Cyanamid is now one of the largest in the chemical industry, a world-wide organization owned by more than 67,000 shareholders (better than double its 29,500 employees) with more than 40 manufacturing plants, 3 major research centers and partnerships in 7 associated companies. It produces nearly 6000 different chemical products for industry, the medical profession, the farm and the home. Its products are sold in the United States, Canada and 80 foreign countries throughout the world. In 1957 its sales were over \$532,000,000.

The answer to the prediction of starvation; the provision of a potential food supply greater than ever before for both humans and animals; the discovery of life-saving drugs, and the development of thousands of new and improved chemical products for home and industry have been made possible largely through research in chemistry—much of it through Cyanamid research. And much of Cyanamid research has been and is done at the Stamford Laboratories of the Research Division, the largest and most diversified of the company's three major research centers.

The great majority of all the products manufactured in Connecticut benefit directly or indirectly from research. Undoubtedly most of the Connecticut manufacturers use some of the products sold by or upgraded by Cyanamid.

Cyanamid—Three Concepts

Cyanamid is an unusual word to most people though familiar enough to the chemist. It means different things to different people. Actually the word takes in three complete concepts. It is an idea, a product, a company.

As an idea, Cyanamid was the answer to a challenge—the answer of synthesis where natural materials ran

short; the means, through the Frank-Caro process, of fixing atmospheric nitrogen in calcium carbide to form a new compound: calcium cyanamide.

The Cyanamid idea, then, was the bold one of applying a synthetic fertilizer to depleted farm lands in place of dwindling natural supplies. This original idea was not only successful in itself, it sprouted a whole complex of new products—a dazzling family tree of useful chemicals. Synthesis was the key to this new world of chemistry, wherein man began to manipulate the atom to build molecular structures which had never existed before.

As a product, cyanamide is a tangible chemical substance whose manufacture was the prime motive for founding the company. Its full name is calcium cyanamide, a powdery grey material containing about 21% nitrogen. The name of the material is generally shortened to cyanamid, without the final "e"; thus the name of the company.

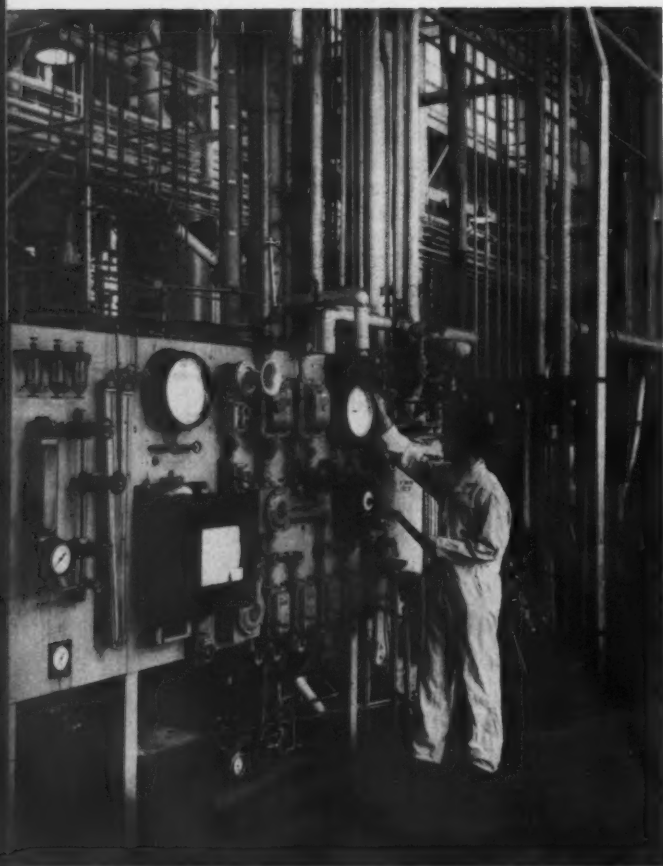
Intensive research on the varied chemical possibilities of calcium cyanamide was started soon after the company was founded. From this early emphasis on research and diversification came many hundreds of products that have built a solid position for the company in fertilizers, mining, industrial and organic chemicals, insecticides, synthetic fibers and sulfa drugs.

As a company, Cyanamid was founded by Frank Sherman Washburn. Mr. Washburn purchased the American rights to the Frank-Caro process and brought them to America in 1907 to make calcium cyanamide.

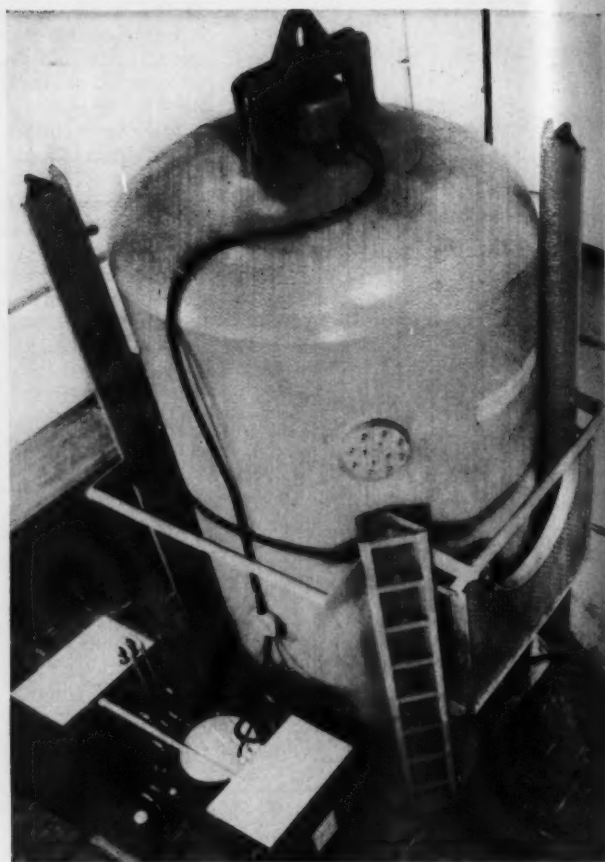
Most of Cyanamid's products have been and continue to be intermediates, i.e., products that are used by other manufacturers in products sold to the consumer. However, more and more Cyanamid products are being sold directly to the consumer under such well-known labels as FORMICA[®] laminated plastic, Lederle drugs and pharmaceuticals, AUREOMYCIN[®] chlortetracycline products, ACHROMYCIN[®] tetracycline antibiotic, ACRONIZER[®] chlortetracycline antibiotic (for maintaining food freshness), GEVRAL[®] geriatric vitamin mineral supplement, RHULICREAM[®] analgesic antiseptic cream, MELMAC[®] quality melamine dinnerware, MELOSTRENGTH[®] paper, AERO[®] Cyanamid fertilizers, THIMET[®] systemic insecticide, AERO[®] cyanate, weedkiller and Malathion, a broad spectrum of the dithiophosphate type.

Four Eras of Growth and Change

The founder of Cyanamid, Frank S. Washburn, was an American engineer born in Illinois, the only son of a



A chemical operator checks a reading on an 8" diameter packed stainless steel distillation column used in the purification and process development of methylstyrene used to make Cymac[®] molding compound.



This super-voltage Van de Graaff electron accelerator will go into operation this fall in the new Ionization Radiation Center now under construction at the Stamford Laboratories. The 3-million volt machine is over 11' tall, 5' in diameter, and weighs 8,000 pounds.

transplanted New England family. Trained as an engineer at Cornell, he rose rapidly becoming in turn a railroad superintendent, construction boss for the old Manhattan Third Avenue Cab Railway, the builder of dams and reservoirs for New York City and San Francisco and a bold industrial pioneer who promoted twenty-four companies in a dozen fields. Eighteen became profitable successes; two managed only to survive; four were flat failures. Of those that succeeded, best known and most successful is American Cyanamid Company of which Mr. Washburn was president for 15 years until his death in 1922.

Mr. Washburn's presidency was the first of four distinct phases in the growth of Cyanamid. It also marked the early emphasis on research and the beginnings of a program that resulted in establishing a central research laboratory in Stamford in 1937.

First Era of Growth

The first era was the founding of Cyanamid as a small fertilizer company and its early expansions into ammonia and nitrates production. In 1912 Dr.

Walter Landis joined the staff. He set up the first research laboratory and soon developed three new products—ammonium phosphate, a new fertilizer material; hydrocyanic acid, as a fumigant; and calcium cyanide for gold and silver extractions from ore—plus commercial development of urea, argon and ammonia and nitric acid for World War I.

There were many other men vital to Cyanamid's early growth in a new industry still ignored in financial circles, without a single listing on the New York Stock Exchange. However, one stands out as a well known industrial giant, the builder of the world wide Tobacco Trust, James Buchanan Duke. Duke and Washburn first met by chance in 1914 and later formed the Ammo-Phos Corporation to manufacture a new high-test phosphate fertilizer, ammonium phosphate. This initial investment of Duke in Cyanamid became one of his major interests. While his great wealth was important to the company, of greater value was his prestige, his business experience, his knowledge of finance and merchandising and his advanced ideas about management.

The Second Era

Cyanamid's second era was one of diversification. It began with Cyanamid's second president William Bell, a Quaker, trained in law who had previously handled the company's business for a New York law firm. For twenty-eight years he built the company through vertical and horizontal diversification. Through research and the purchase of many new companies, large and small, Cyanamid entered such new fields as plastics, pharmaceuticals, biologicals and surgical sutures, and design and process engineering. Coincident with entry into new fields was expansion in dyes and their intermediates, heavy chemicals, pigments and explosives and joint ventures with other companies to exploit processes and raw materials.

The early interest of Mr. Washburn in research was given even greater emphasis by Mr. Bell as part of his diversification program. Central research laboratories were established in Stamford in 1937 and great importance was given to both the extension of basic research and applied and development work to upgrade old and create new products.



The ten-acre main building of American Cyanamid Company's Stamford Research Laboratories dominates the forty-one acre site on the Boston Post Road, Stamford. Other Connecticut plants are the Surgical Products Division in Danbury and the Plastics and Resins Division in Wallingford.

Third Era—Consolidation

Cyanamid's third era of consolidation began when K. C. Towe of Greenwich, Connecticut became president in early 1952. He retired from his position as Chairman of the Board in early 1958. The third era was one of consolidation and alignment which crystallized the functions of the General Staff and the role of the Divisions. Of special significance was the formal recognition and organization of research as the new and separate Research Division with a General Manager and responsibility for the research of all the operating divisions.

The transitions were gradual as areas of operations were more precisely defined in drawing closer together the widely diversified operations of the Company. During this period the company's net sales grew from \$368,000,000 to \$532,000,000.

Fourth Era

Today, Cyanamid is at the beginning of a fourth era under its fifth president, Dr. Wilbur G. Malcolm, a trained bacteriologist with years of activity in research and product development. It

is an era of systematic upgrading of products, with some movement toward those more readily identified by consumers, as compared with the earlier production of intermediates.

While the acquisition of companies played an important part in Cyanamid's growth, it is the research done that is the prime generator for new business, the important measure of its aggressiveness and creativity. Under Dr. Malcolm, over \$23,000,000 will be spent this year on the over-all research and development program.

Cyanamid in Stamford

The opening of the Stamford Laboratories in 1937 marked the beginning of the trend of research laboratories into this area which has been given recognition by the Stamford Chamber of Commerce in naming Stamford "The City of Research." Presently Director of the Laboratories is Dr. Alfred L. Peiker, a former three-letter athlete from Trinity College with a Ph.D. in Physical Chemistry from McGill University. Dr. Peiker became Director in September 1957 after twenty-three years with Cyanamid.

Under his direction there are five technical departments. The two largest serve six of the operating divisions and are responsible for their product research and development. They are the Industrial Chemicals Research and the Polymer Research Departments.

The Basic Research Department is non-commercial. Its work includes investigations for new knowledge and data—the basis for future technology; preliminary investigations outside an established program; and research towards new fields of potential commercial interest in which the company is not presently engaged.

These three departments are aided by two service type departments. The Research Service and the Chemical Engineering Departments provide the vital analytical tools and techniques, the pre-pilot and pilot plants, the microscopy, spectroscopy, instrumentation, technical information and many other analytical services that make possible further research and product development.

Maintaining the many buildings and laboratories on the 41-acre site, including the 10-acre main building, is the Operations Department. Its varied staff includes 125 craftsmen to provide the diversity of skills to fabricate the special equipment needed throughout the Laboratories.

In addition the Laboratories have a full-scale Medical Department, Patent Law, Accounting and Personnel Relations offices plus an Industrial Toxicology and Industrial Hygiene Section.

The main building, formerly the site of the Verran Textile Company, first contained about 150 scientists moved in from various smaller laboratories as Cyanamid's first step toward consolidating its various research activities into a central laboratory. Today the staff numbers nearly 1,000 including over 400 professionals of whom over 50 are women. They include technical administrators, chemists, physicists, biologists, engineers, technologists, patent attorneys and technical literature scientists. Assisting them in their research are approximately 130 scientific assistants, and 120 skilled operators. There are some 225 additional non-technical people serving all the departments.

Company supported programs for employees include recreational activities, group insurance, pensions and retirement plans, on-the-job training, an extensive advanced education program with special grants for work here and abroad. The Laboratories also have an important public and community relations program which aims to fully utilize the potential of the Laboratories and the staff to strengthen and support

(Continued on page 57)



Dr. Emiel Wegelin, Dutch water purification expert and assistant director, Central Technical Institute, The Hague, samples purified sea water made at Emhart Manufacturing Company's Marine Laboratory at Millstone Point. Awaiting his reaction are (left) Sixten F. Wollmar, Emhart president, and F. R. O'Leary, Maxim president.

They Make Salt Water Fresh



■ EXISTING reservoir and well systems are simply not enough for many communities whose populations and needs already have outgrown, or are sharply pressing fresh water supplies.

Where such communities are located near the sea, a practical answer to the water shortage problem is at hand in a modern distillation process. The principle—evaporation followed by condensation—is as old as nature. This is how rain water is made, by drawing off vapor from the seas and brackish marshes and spilling it back out of the clouds as a pure and mineral-free liquid.

Man has known how to extract dissolved mineral solids from sea water for hundreds of years. But, until recently, the equipment has consisted of rather primitive and not too effective stills for evaporation. These stills had two major drawbacks. The first was inefficient use of fuel to develop evaporation temperatures. The second was excessive fouling or "scaling" of the equipment with considerable downtime to clean it.

A Hartford firm, Emhart Manufacturing Company's subsidiary, The Maxim Silencer Company, recently announced a superior process for distilling fresh water from the sea which puts shoreline areas within economical reach of all or any part of their pure water requirements.

The new equipment is the result of

John U. Marsh, laboratory manager at Millstone Point, checks output of flow at fresh water meter of a Maxim evaporator under test.



Visitor views plastic pipe which takes full-density sea water from Long Island Sound to marine laboratory in background for conversion into fresh water by Maxim evaporators.

15 years of company evaporator research and development at its plant at 80 Homestead Ave., Hartford and at its unique private testing laboratory located on Long Island Sound at Millstone Point, Conn.

Low Cost Process

F. R. O'Leary, Maxim president and executive vice president of Emhart, has told the Federal Government that his company's distillation process can desalt full-density sea water for about 63 cents per thousand gallons.

Maxim equipment starts making water from the ocean within minutes of start-up time, using any fuel or waste heat from electric or steam power plants. Where "waste" heat from electric generator plants or "burn off" from oil fields is available, operating charges will favorably compare with those of conventional reservoir distribution systems.

As in any evaporator or distillation system, raw sea water is pumped in and heated to the boiling point. The resulting vapor is collected and then condensed to fresh water while unused salt water is returned to the sea. Fresh water is pumped to where needed.

The heart of the Maxim system is a metal "basket" of corrugated or fin structure, resembling an accordion wrapped around in a circle. Steam is admitted to the inside of this basket while sea water surrounds it. Steam heat causes the sea water outside to boil and vaporize. The Maxim system employs a high-pressure, steam-jet vapor pump which re-uses some of the vapor to make more steam to boil more water making for increased fuel economy.

What little scale does form on the smooth metal surface of the basket is removed by the simple mechanical process of "cold shocking." This means steam-drying the scale on the basket, then introducing cold brine which contracts the metal fins and "shocks" the scale from the basket, an occasional process taking less than an hour.

A million-gallon-per-day plant takes up about as much space as a good-sized house, its dimensions being approximately 30' x 80' x 20' high.

"Thermal distillation appears to be the most practical method of converting sea water to fresh," O'Leary told the U. S. Senate Sub-Committee on Irrigation and Reclamation. "By sea water," he explained, "we mean water with a solids count of between 30,000 and 35,000 parts per million. An efficient thermal distillation process will refine this water down to a soft, pure five parts per million or less."

On Land and Shipboard

Maxim pioneered its evaporator equipment aboard ships, and today over 400 of the naval and merchant vessels of the world are using it. These include the Swedish American Line flagship, MV Gripsholm; the U. S. aircraft carrier, Ranger, and all but one of the American nuclear submarines.

With water use in the United States alone expected to double within the next 15 years, Maxim now is placing special emphasis on the development of economical land-based units. These can produce pure water in amounts ranging from a few thousand gallons per day up to the millions required by water-poor towns and cities.

Government Study

The U. S. Government currently is considering the possibility of a \$10 million appropriation to explore methods of converting salt water to fresh, and O'Leary has recommended as ideal sites for demonstration plants three Southern California seacoast areas; Key West, Fla., and St. Thomas, V. I.

With local utilities in Southern California and St. Thomas planning to expand power plants to meet growing population and industry pressures, O'Leary believes now is the time to plan for distillation equipment to utilize generator waste energies.

Key West only recently expanded the city-owned power plant and is in a position to utilize waste or bleed steam from the present turbines.

Two of the company's latest evaporator plants were installed on resort islands this winter. Castle Harbour Hotel, Bermuda, and Caneel Bay Plantation, St. John, V. I., now are assured of a continuing supply of pure water, even in times of drought. Potable water imports in the past have cost these hotels up to \$8 per thousand gallons.

Since world water use can only grow and the supply dwindle, Emhart executives foresee a general turning to the distillation method on the part of governments and industries.

World-wide expression of interest in the Maxim method has come from such areas as Israel, Australia, Southern California, Hawaii, North and South Africa, the Florida keys and sea islands and peninsulas everywhere.

Setting up evaporator plants not only enables a community to meet current water deficits but allows it to plan and build for future needs.

Heavy water-using industries, such as chemicals and steel, often are compelled to by-pass otherwise desirable plant sites because of inadequate supply.

Thus, Emhart management sees in the Maxim process a means of keeping water from becoming a limiting factor in the growth of industry and communities.

Besides providing an economical method of making new fresh water, the evaporator system works to stabilize underground water tables and prevent wells in coastal areas from becoming contaminated with salts. This is because the evaporator system does not further lower the water table. It returns to the land fresh water from the sea.

Social Science Research: What's In It For Business Managers?

By ROBERT H. GUEST

Associate Director of Research
Yale Technology Project

■ "WHAT are you fellows in the so-called social sciences doing to help business managers do a better job?"

Connecticut manufacturers and others throughout the country frequently ask us this sharp question. We sense a certain perhaps justifiable tone of skepticism. The average manager is often too busy to find out what university researchers are doing. What little information trickles through is often couched in language which is difficult for managers to translate. And we must admit that research findings even when they do get through often appear inconsistent and contradictory.

Let's put the cards on the table. The study of human behavior is still in the crawling stage when compared with the giant strides taken by our colleagues in physical and medical science. But progress is being made. A great deal of research, originally started by the universities, has found practical application in fields of marketing, advertising, training, testing, and personnel administration.

This article is a modest attempt to report on some work which has been carried out by one group, the Yale Technology Project, and which may be of practical interest to managers. Most of us in this group have had business experience before coming into the Project. All of our research and consulting has been carried out in real life on "going business" organizations.

Let's tackle just a few of the kinds of questions on which our studies over the past twelve years have focused.

"What motivates a worker to want to do a good job?"

Everyone knows the more obvious answers: adequate pay, decent working conditions and fair treatment from the boss. However, in our studies of many hundreds of industrial workers in a variety of industries we have also discovered some motivating influences which lie deep below the water line.

For example, we have become extremely curious about the workers' reactions to his immediate job—what he



ROBERT H. GUEST

does with hand, eye, and mind, minute by minute during the working day. What seems to achieve efficiency by industrial engineering standards may not make for efficiency in the long run. Our evidence seriously questions the long standing assumption that the fewer operations a man performs the more efficient he will become. The assumption is true if one relies solely on the immediately measurable results of time and motion studies. But we have

discovered that the extreme short cycle repetition of mechanically paced tasks can be carried too far. Most workers, particularly those on highly fractionated jobs, want to do something more meaningful with their time. They show a clear preference to want to work on the *whole* of a part, component or product. They want to be, as many have put it to us, "more than mere cogs in the machine."

This sense of frustration can have long range effects on a worker's attitude toward his work and toward the company. His interest in quality performance may be affected. It can manifest itself in carelessness about safety requirements and in absenteeism and turnover. It can create a sort of "attitude-set" from which grievances are easily triggered off—grievances over things which are not remotely connected with the immediate job itself.

As to what to do about this kind of problem, and remember it varies considerably according to personality and the nature of the operations, we have found that jobs can be redesigned so as to make them both productive for the company and meaningful to the worker. Job enlargement, a term coined by Charles R. Walker of our Project years ago, is one approach to better job design. Job enlargement

Editor's Note—Mr. Guest, author of this article, is engaged as associate director of the Yale Technology Project. The Project was launched in 1946 as a research unit of the Institute of Human Relations, to delve into full-time study of the effects of man's production methods on organization and human relations. Financed by money grants from industry and foundations, the Project's main functions are:

1. To supply universities, business and engineering schools with case and other teaching materials in the field of technology and human relations.
2. To make available its latest findings to industry, including executives, managers, labor representatives, personnel directors, and others.
3. To develop and test hypotheses leading to a more comprehensive theory of human relations in industrial organization, and to make this research available to scholars at home and abroad.

Over a score of interesting and informative articles dealing with the research findings in this Project have been published. A complete list of these articles, as well as reprints of all articles are available at 25¢ each from the Yale Technology Project, 333 Cedar Street, New Haven, Conn.

means that elements of several operations are combined in a long time cycle with the worker completing the whole of a given part or product. In its broadest sense it means significantly greater control by the worker of his immediate work environment.

We have seen the application of this job design principle work successfully but it is not something to be worked out alone by the methods experts. The employee himself and his supervisor must be involved. The worker must come to feel that he has had a real say in creating the kind of job which will maximize his own potential and satisfy his own as well as the company's needs.

What is the most effective incentive system for operations which are becoming more highly automated?

This is a complex question which can only be dealt with at considerable length and which must be tailored to particular conditions. However, our detailed studies of the installation of automatic equipment casts serious doubt on the effectiveness of traditional piece work or group incentive systems.

Here are two central problems:

1. With machines and equipment which electronically control the rate of output there is little the worker can do to increase production and, hence, increase his individual bonus rate.
2. Maintaining sustained production in the more complex automated type of operations requires the coordinated effort, not of production operators alone. Integrally tied in are the maintenance workers, material handlers, schedulers, production control specialists and many others charged with the responsibility of keeping expensive equipment going. To put the production operators on incentives and not the others is flying in the face of trouble.

Our observations suggest two alternative approaches to these central problems. One is to eliminate the incentive system entirely, particularly if individual piece work is involved, and then set up a fair day's work standard for all. The other is to expand the scope of a group incentive system so that all parties concerned, not production workers alone, share the benefits of full production. They may not be able to control machine output but they can be motivated to prevent breakdowns and to make changeovers more quickly.

We are fully aware of the practical difficulties involved particularly where present systems have been accepted for years. But we have recommended such changes and have seen them carried out successfully. Again the key to suc-

cess is in the approach and in the planning for such changes. Those who are directly affected must feel they have had a part in planning for the change.

Why aren't foremen more effective as supervisors?

The search for the answer has led to elaborate programs of supervisory selection and training. Some are good but most of them, in our judgment, are a waste of time and money. We could enumerate many reasons, but our experience strongly suggests that before management proceeds on such schemes a more basic question must be asked. "What does a foreman do?" Sounds simple and naive but the truth is that most managements do not know how a supervisor actually spends his time.

A few years ago we observed the minute by minute behavior of fifty-six production foremen, each for a full eight hour day. We tabulated a total of more than 32,000 incidents of behavior. The results, when analyzed, were staggering to management and to the foremen themselves. Space prevents elaborating on the findings here. In general we found that huge segments of the foreman's time were taken up in activities which had little to do with his primary supervisory functions. More important we discovered that in most instances it was not the foreman's own incapacities or lack of training which created the situation. Rather he was the victim of circumstances over which he had little or no control. Poor scheduling, poor stock control, inadequate manpower, delayed service from the maintenance, time standards and personnel departments—all these combined to make the foreman do little more than run messages and put out fires. Relations with his men and with his superiors were seriously strained, and it should be pointed out that this company had a national reputation for its efficiency and for the effectiveness of its training and selection programs.

Using the methods of observation developed by our staff we went on to apply the technique in other organizations with very encouraging results. Observations of on-going behavior plus interviews in depth can serve as basic data, which properly handled, can be fed back to the organization from top echelons on down. It is an extremely useful method not only for spotting problems but also for developing plans for solving them.

What is the manager's role in making the plant tick?

Anyone who pretends to answer this question in a few sentences is either a genius or a fool. This writer aspires to

neither category. I would, however, like to report the fact that some serious research on this question is being conducted by a number of reputable social scientists in the U. S. and abroad.

We at the Yale Technology Project recently completed an extensive study of a plant, one of six identical plants, which in three years time went from lowest to top position as measured by efficiency, quality performance, labor grievances, and by a number of other indices. The change was initially sparked by the introduction of a new plant manager. We were not so much concerned about tracing down personality traits and abilities of one man. In fact, we are somewhat skeptical of many current attempts to test leadership ability as such. A great leader under one set of conditions can be a flop under other conditions. Rather we sought to nail down the processes of change which took place in both the behavior and the feelings of those at the different levels of the total organization. The formal organization chart remained the same but the pattern of relationships within line management and between the line and staff departments took on new forms and dimensions. Indeed, some of the time honored assumptions about authority and responsibility were found quite inadequate in explaining the successful change. The comptroller, the head of inspection, the superintendents of the operating departments and many others did not carry out their functions just the way "it says in the book".

We believe that the new initiative generated at all levels right down to foremen was not something which could happen only in this one plant and under this particular manager. The "pattern" which emerged, the assumptions as to why it worked, are supported by much basic research on group behavior which, for no fault of their own, hasn't come to the attention of business managers.

To sum up: I have tried to do nothing more than to touch on a few areas of research which we of the Yale Technology Project think might be of interest to managers. These areas concerned one aspect of worker motivation, the problems of incentive applications in automated operations, the roadblocks to effective front line supervision and the role of the manager in the total organization.

We are a long way from final answers but a few guidelines have been established. Our hope is that managers avail themselves of the research findings in the growing science of man just as they have done in making good use of basic research in the science of matter.

Atomic Energy, Politics Mix at Association Annual Meeting

Editor's Note—For the special benefit of all Association members and other readers, *Connecticut Industry* reports on the following pages the highlights of the Association's 143rd annual meeting and conference. The Association gratefully acknowledges the excellent recording service rendered by the SoundScriber Corporation, North Haven, without which it would have been impossible to give so complete an account of the valuable information contributed by the afternoon speakers and by Governor Ribicoff and Senator Mundt at the evening session. With the exception of President Fuller's Report on Association Activities (not given in the report read for him by Vice President Harvey Spaunburg, due to his inability to be present on account of illness), the remarks of all speakers have been briefed for lack of space. Because time before closing date for this issue did not permit all speakers to check the typed version of their recorded talks, C.I. will make any minor correction of factual misstatement, noted by the speakers, in a future issue.

■ NEARLY 650 members and guests attended the evening session and some 300 the afternoon session of the 143rd annual meeting held for the tenth consecutive year at Yale University on Tuesday, September 9, 1958.

While this year's meeting attendance was slightly less than last year's, a consensus among a number questioned gave as the chief reason the fact that only one lengthy afternoon conference was featured this year, rather than two conferences and a speaker last year. Our experience over a number of years in attempting to vary our afternoon program now seems to indicate that the attendance tends to increase with the number of special events scheduled, since each event attracts a different group of guests.

The Business Session was called to order at 2:15 P.M. by Vice President Harvey L. Spaunburg, who presided at both the afternoon and evening sessions

due to the illness of President Harrison Fuller.

John Coolidge, president of the Connecticut Manifold Forms Co., West Hartford, who is this year completing his 14th year as treasurer of the association, gave the Treasurer's Report.

Edward Ingraham, chairman, The Ingraham Co., Bristol, and chairman of the Association's Budget Committee, gave the committee's budget recommendations for the 1958-59 fiscal year, beginning November 1, 1958.

William G. Park, president, Angus Park Woolen Company, Inc., Hanover, a member of the Association's Nominating Committee, reported, in the absence of William L. Sorenson, chairman, the committee's recommendations for five directors to serve for four-year terms beginning January 1, 1959. All three reports were approved, and it was voted that the secretary cast one ballot for the election of the board nominees

submitted by the Nominating Committee. The nominees elected were: For director to represent Tolland County, R. W. Bissonnette, president, The Standard Card Clothing Co., Stafford Springs, succeeding A. W. Cave-don, secretary, treasurer and general manager, Aldon Spinning Mills Corp., Talcottville; for director representing Windham County, Vincent J. Roddy, president, The American Screw Co., Willimantic, succeeding John E. Holt, president, Danielson Manufacturing Co., Danielson; for director representing New London County, Kenneth E. Stober, plant manager, The Dow Chemical Co., Allyn's Point Div., Ledyard, succeeding M. H. Phillips, president and treasurer, The Plastic Wire & Cable Corp., Jewett City; for director representing Middlesex County, John B. Boden, president, The Mohawk Manufacturing Co., Middletown, succeeding Freeman W. Fraim, treasurer,



Head table guests are shown below on their way to Yale Dining Hall for the banquet session.



Vice president Harvey L. Spaunburg chats with Governor Ribicoff and Senator Mundt before dinner.



Treasurer John Coolidge is greeted by George R. Holmes, president, McLagon Foundry Co., New Haven, a former MAC director.



The evening session at Yale Dining Hall was attended by nearly 650 Connecticut industrialists. Highlight was an address by Senator Karl A. Mundt.

Essex Mills, Inc., Essex, and for director-at-large, H. M. Day, president, Norma-Hoffmann Bearings Corp., Stamford, who is now serving on the Board, filling the unexpired term of DeHaven Ross, secretary and treasurer, Homelite Division of Textron, Byram, who resigned as a director in 1956.

Following the adjournment of the Business Session at 2:40 P.M., the four-man panel conference on the topic of "Atomic Energy and Connecticut Industry" was held, with Sherman R. Knapp, president of the Connecticut Light and Power Co., and chairman of MAC's Advisory Committee on Atomic Energy, acting as moderator. The panel participants, all leading nationally-known authorities in their field, held a growing audience on this highly scientific topic, until 5:00 P.M.—admittedly a difficult feat when discussing a technical subject before an audience largely composed of men with limited

knowledge of the subject, but who felt the need for greater understanding of it in this swiftly moving atomic age. (Highlights of the talks by all panelists are published in this issue.)

As in previous years the Entertainment Hour was staged at the St. Elmo Club between 5:15 P.M. and 6:15 P.M.

Starting at the scheduled hour the evening session began with dinner at 6:30 P.M. in the Yale Dining Hall, with Reverend C. Lawson Willard, Jr., rector of Trinity Church on-the-Green, New Haven, pronouncing the Invocation following the singing of the National Anthem.

At 7:50 P.M. Vice President Spaunburg introduced the head table guests and then introduced Governor Abraham A. Ribicoff. (Highlights of his address appear on a following page.)

Vice President Spaunburg then read President Fuller's report which appears on the following pages of this issue

along with a detailed report of Association activities which was not read.

Mr. Spaunburg then introduced The Honorable Karl A. Mundt, Senator from South Dakota, who spoke on the topic, "The Road to Freedom for Americans." Speaking for more than an hour, Senator Mundt held his audience in rapt attention as he painted a realistic and disturbing picture illustrating how politics now governs economics, and how political control is nearly in the hands of a third group coalition rather than in either of our political parties—and how this coalition is seriously threatening to wipe out our American "freedom of opportunity" system. Only by rallying to the banner of a fourth group—Americans for Constitutional Action—just recently organized, can this threat be met successfully, Senator Mundt said. The important highlights of his address appear in this issue.



The highlight of the afternoon session was a panel discussion on atomic energy. Panel members are shown here, left to right, Walter R. Guild, radiation safety officer, Yale University, Louis N. Rowley, Jr., publisher and editor, *Power*; Sherman R. Knapp, president, Connecticut Light & Power Co., who served as moderator; Reuel C. Stratton, associate director of the Research Department, Travelers Insurance Company, Hartford, and Oscar M. Bizzell, chief, Isotope Development Branch, Office of Industrial Development, Atomic Energy Commission, Washington, D. C.

Nuclear Energy - Its Effect Upon The Insurance Industry

Brief of Address at Afternoon Session

By REUEL C. STRATTON, Assistant Director
Research Department, Travelers Insurance Co.

■ MY discussion will not be confined to what nuclear energy has done to the insurance industry but will tell you how the objectives of the insurance business in this new field may be of assistance to you. For the first time nuclear energy has placed in the hands of man a source of energy which, while beneficial, yet can cause more harm to people and to property than any single person has ever had within his control before. Radiation can't be felt, can't be seen; it can cause a complete loss with no visible evidence of damage. In one case I know of the amount of actual physical damage might cost \$10,000.00 to repair, but consequential loss from decontamination not including loss from business interruption could run well between half to one million dollars.

The Atomic Energy Act of 1954 declassified nuclear energy so that industry could participate. This brought about many industrial changes, as you well know. It afforded an opportunity for many industries who previously had been only eligible to receive radioisotopes to enter the field of production of energy such as power plants, the development and utilization of research and test reactors and to enter the field of production of fuel elements for such reactors. Examples of such industries exist in Connecticut today. This participation by industry brought with it many additional problems.

The impact of nuclear energy has not changed the industrial picture so

far as insurance is concerned in any way. It has always been the responsibility of industry to think of three different things from a business standpoint. The first is the protection of employees, the second is protection of the public, and third is the protection of the investment. Nuclear energy has not diminished these needs, it has made the need for this protection greater because the possibility of loss has become greater. Demands voiced by many for insurance coverages in excess of individual insurance company capacity lead to the information of other means of taking care of this insurance need.

Insurance, particularly since 2500 B.C., or about the time of the Phoenicians, has followed industry. It has developed ways and means of cushioning losses so that industry could stay in business. I assure you the insurance industry, regardless of the high capacity desired, has not stood still nor felt the job was too large. It has attempted to the best of its ability to devise ways and means whereby protection against the hazards of nuclear energy can be afforded at reasonable cost. So far as Life insurance is concerned, it has been no problem. The average person today can buy his ordinary personal forms of insurance, even in the most hazardous nuclear industry, at rates comparable for the same occupation as if he were working in the center of New Haven or Hartford. A small fraction of one percent who are engaged in extra-hazardous occupa-

tions may justify some additional actuarial underwriting evaluation. Compensation insurance has been no problem. The effect of radiation is considered in most State's jurisdiction as being an occupational disease and, therefore, subject to the legal requirements of the State. It falls within the usual Compensation policy required for the particular State jurisdiction. Necessarily the exposure requires control, but that is usually accomplished easily.

Third Party Liability is what has created the greatest insurance problem. First because a major episode could affect many persons and create an avalanche of claims, some of which might be imaginary, some could be actual, and some might not show up for years. This is the first time such a situation has existed. We have large industrial plants, but we have sufficient insurance experience to give a good forecast of the amount of damage expected. Here we have no experience. The demand for limits, fully believing that this would be what is considered absolute liability with no question of contributory negligence, brought forth the development of the Nuclear Energy Liability Insurance Association which is a group of some 135 stock insurance companies who have agreed to create a fund which now approximates 40 million dollars. This is backed by a mutual organization on a quota-share basis and then again backed by foreign commitments until it has a capacity of 60 million dollars approximately, available for Third Party Liability for the nuclear exposure only. This creates a capacity sufficient to cover the financial responsibility of anyone entering the nuclear phase of industry. The policy from this organization is accepted as *prima facie* evidence of financial responsibility.

From the Physical Damage standpoint, the problem was again one in which the insurance industry had not previously participated. Here was an exposure where there could be a total loss without having any visual damage. For instance a major episode with a reactor in a containment sphere where the containment sphere maintained its integrity could produce a situation so hot radioactively that no one could go inside it for years to find out just exactly the condition within the sphere. Such would have to be considered a total loss under the policy. The contamination resulting from a nuclear incident, and that doesn't necessarily mean a reactor incident, it could be a small fire in a fuel fabrication plant, might so contaminate the building or the surrounding property, that it would cost many times the physical loss to decontaminate. An example of this is

the Cincinnati case where a very small spillage from a radium capsule so contaminated the building that it never could be used for food or pharmaceutical purposes and the nuclear background was far too high to return to the original occupancy.

Another problem under a physical damage policy would be to determine which came first the hen or the egg. In the event of loss, was it caused by a conventional peril which released nuclear energy or contamination or did a nuclear episode create the origin of certain other consequences? A second organization, the Nuclear Energy Property Insurance Association, was developed and again by combination with Mutual interests and foreign backup has available a capacity between 65 and 70 million dollars. To insure reactors, fuel fabrication plants, chemical processing plants an All Risk policy has been made available and covers Fire, Extended Coverage, Vandalism, Malignant Mischief, Boiler and Machinery and the nuclear exposure, all in a single policy. Physical Damage loss is limited by the usual exclusions and is subject to a moderate deductible. Such coverage eliminates the need to determine which came first—did the boiler blow up and spread contamination, or was there a nuclear episode which caused the boiler to rupture. Rates for this type of coverage are in the main conventional, subject to the local jurisdictional authorities. The nuclear feature is based upon the type of material handled or the use of the object covered.

Contamination is one of the greatest problems expected, and while the policy itself covers contamination to the insured site, if a policyholder desires to extend contamination coverage to his other property off-site, he can do so by endorsement. Another organization known as the Nuclear Insurance Rating Bureau has lifted the responsibility of rating procedures for nuclear risks from general jurisdictions by agreement and is now functioning to make All Risk policies available in a conventional manner to those who choose to buy this protection.

The Liability insurance coverage from a nuclear standpoint can only be obtained through the Nuclear Liability Insurance Association or the counterpart Mutual organization and not from any one company. In small physical damage risks one company may decide to extend its capacity to cover it, but in general, most companies place nuclear risks within the physical damage insurance associations.

I can only conclude and I believe you'll accept that conclusion that the insurance industry has, and is attempt-

ing to keep abreast of this new problem as it affects insurance purchasers. Insurance companies have a service comparable to the usual accident prevention or industrial accident or industrial hygiene control to advise policyholders large and small about the hazards of nuclear energy as it may affect them. They are also providing a means whereby industry can purchase protection against 3rd party liability

as well as to protect their invested interest, to make available, not only now but as time goes on and the need appears, all necessary forms so that the nuclear industry in all walks can purchase any required protection. I believe historians in the year 2100 will record, as it has been recorded since 6000 B.C. that insurance has done its best to assist industry and will continue to do so.

How We Get Energy From the Atom

Brief of Address at Afternoon Session

By L. N. ROWLEY, *Publisher and Editor, Power Magazine*
New York

■ LET'S start with the atom itself. Incredibly tiny as it is—a million billion to cover the head of a pin—we now know that within it are still smaller particles and reaches of space between them akin to the space of the solar system. As a matter of fact, we can imagine the atom as a miniature solar system. At the center of this system is a *nucleus*. Around this small and relatively heavy core, charged particles called *electrons* spin at tremendous speeds. To get an idea of the space in this tiny solar system, imagine the nucleus is a baseball. Then the electrons would be specks nearly half a mile away!

For our purposes today, we can visualize the nucleus as consisting of two kinds of particles—*protons* and *neutrons*. Protons are positively charged and there is usually one proton for each negatively charged electron, so the atom as a whole is electrically neutral. Neutrons, as the name implies, carry no charge. Virtually all the atom's mass is in the nucleus—an electron has only about 1/1800 of the mass of a proton.

The *atomic number* you remember from high-school chemistry corresponds to the number of protons. This identifies the element—each element has a definite number of protons, and an equal number of electrons. But we have discovered that an element can have different numbers of neutrons. These species of the same element are called *isotopes*—a word that has become common. The element uranium is a good example. It exists in three isotopic forms. All have, of course, 92 protons in the nucleus and hence an atomic number of 92. The most common form of uranium has 146 neutrons. This is U238, where 238 (the sum of the protons and neutrons) is known as the *mass number*. Another form of uranium, in which we are particularly interested, has only 143 neutrons, for a mass number of 235. Still

another form of uranium is U234, with 142 neutrons.

Since the first cave man learned to make fire, we have been utilizing atomic reactions, most of the time without knowing it, of course. The process of burning fuel, and all other familiar chemical reactions, involve only the electrons of the atom. Now we are able to produce reactions in the nuclei, with vastly greater energy releases. Broadly speaking, we can produce nuclear energy by two kinds of processes. When the nuclei of light atoms are combined, enormous amounts of energy are released. This is the *fusion* process, the subject of current intensive research. Conversely, when heavy nuclei are *split*, great energy is likewise released. This is the *fission* process, the subject of main concern today.

Now let's assume that fission occurs in a mass of natural uranium, with billions of nuclei present. Only about 0.7% of these will be readily fissionable U235; most of the remainder will be U238, with a trace of U234. We can see that, if conditions are favorable, neutrons ejected by the first fission may be captured by other nuclei, followed by more fissions.

If each fission causes at least one more fission, the process can continue in what is called a *chain reaction*. Whether we achieve such a chain reaction depends on the probability of neutrons striking fissionable nuclei and being captured. In the natural uranium of our example, the readily fissionable nuclei are the U235 nuclei and, after plutonium has been formed, the Pu239 nuclei. These fissionable nuclei are in a very small minority, so we're going to have to take some steps to increase the probability of capture and fission.

One very direct way lies in increasing the percentage of fissionable nuclei present—adding pure, separated U235 to the natural uranium, to make what is called *enriched* uranium. Because of



Members are shown leaving Sterling Law Building at the close of the afternoon session.

the high cost of separating U235, this is a method to be used sparingly. Another step that is always taken is to avoid loss or escape of neutrons, to maintain a high *neutron economy*. Finally, we can use a moderator to slow down the neutrons, because a "slow" neutron spends more time in the neighborhood of the fissionable nuclei and thus has a greater chance of capture and fission. A moderator is a material in which neutrons can bounce around, losing energy and speed at each collision. A good moderator, of course, absorbs very few neutrons.

We can now glimpse, in very general terms, the elements of a *reactor*—the device in which a controlled chain reaction takes place to release energy in the form of heat. In a typical case, the fuel might be natural uranium, or uranium enriched from 0.7% U235 to perhaps 2%. In many instances it will involve a moderator—graphite, for example. To be sure of maintaining a chain reaction, we'll have to produce more than the bare minimum of needed neutrons, so we'll want some way of purposely absorbing neutrons to control the reaction. And we'll want some kind of a reflector to keep neutrons from escaping wastefully.

Since the fission process produces harmful radiations, we need some shielding to contain them safely. And, finally, we'll need to remove the heat produced by fission, and apply it to some useful purpose.

The reactor core is contained within a tank or pressure vessel, with a thermal shield to keep concentrated heat from the vessel. A cooling fluid of some sort is introduced into the bottom of the reactor vessel to flow upward

through the core and out at the upper part of the vessel. The heat so removed is the useful result of this process—it can be used to generate electricity or for industrial purposes. The entire reactor would be surrounded with a shielding material—say concrete in sufficient thickness to attenuate dangerous radiations to a safe level.

All this has a deceptively simple look. But what is simple in principle becomes extremely complex in practice. For one thing, when we start to design an actual reactor we face an embarrassment of riches in the number of combinations of basic elements that are worth trying. Fuel may be metallic uranium, natural or enriched to varying degrees. Or it may be one of the less refined forms of uranium such as uranium oxide. It might be in the form of rods, bars, tubes, or perhaps pellets. It might not even be in solid elements but might be circulated as a liquid metal, as a fluidized powder or as an aqueous solution. A number of materials might be used as moderator—graphite, heavy water, ordinary water, to name a few. The coolant or heat-transfer medium might be any one of several liquids—ordinary water, for example. The water may be pressurized to prevent boiling or may be allowed to boil and generate steam within the reactor. Or the cooling medium might be a liquid metal such as some of the sodium and potassium alloys, or it might be a gas such as carbon dioxide. Some materials—ordinary water, for example, can serve as both moderator and heat-transfer medium.

Perhaps most bristling with problems and question marks is the entire area of nuclear fuels. The promise lies

in the fact that complete fissioning of one pound of U235 releases 3 billion times as much energy as an average pound of coal. To get a glimpse of the difficulties in realizing this promise, let's trace through the fuel cycle of uranium, which contains the only fissionable isotope occurring in nature and is, to date, the only fuel material used extensively. Uranium ores run to low concentrations and while no radically different mining and extraction processes are required, and there are no unusual hazards, the process of reduction is tedious and expensive. Metallic uranium sells for about \$18 per lb.

Natural uranium, although it contains but one part in 140 of the fissionable U235 may be, and is, used as a reactor fuel. For the A-bomb, however, essentially pure fissionable material was needed. As one part of the A-bomb program, several methods were developed to separate U235 from the U238 that forms the bulk of natural uranium. The most successful of these is the gaseous diffusion process, now employed at the giant installations at Portsmouth and Paducah. Uranium hexafluoride, a gas, passes through miles of porous barriers and the slightly lighter U235 is slowly, and expensively, separated from U238. Some idea of the cost of this process can be gained from the fact that U235 is "priced" at a figure equivalent to about \$11,300 per lb. This previous material can be combined with U238 in metallic forms of varying degrees of enrichment.

It can be seen that the raw material for nuclear fuel elements is already expensive. For most types of reactors cost is further increased by the need for hermetically cladding the elements, often with expensive materials such as zirconium. And finally, the fuel elements must be fabricated to precise dimensions so passages for coolant flow will be uniform to avoid local hot spots.

When the fuel element is removed from the reactor, the operator faces two choices. He can dispose of the element—at no slight cost because of its radioactivity—and in so doing throw away anywhere from 85 to 99% of its highly expensive fuel value. Or he can store the spent elements while they "cool" radioactively—allowing decay of the short-lived fission products—and then have them reprocessed for recovery of valuable fuel materials.

Against these various difficulties and costly factors in the fuel cycle, we should mention two enticing possibilities. We have seen that capture of a neutron by a U238 nucleus leads to the formation of plutonium, a fissionable material. By a similar process, thorium

can be converted to U233, another artificial nuclear fuel. Every reactor in its normal working converts some fertile material to fissionable material, and it has been demonstrated that a reactor of appropriate design can produce more fissionable material than it consumes from the original charge. This breeding offers possibilities for substantial reductions in fuel cost. Another possibility is the discovery of simpler means for reprocessing and particularly for separating some of the waste fission products. In addition to making the disposal problem easier and cheaper, such separation would yield fission products of potential value to industry.

From this necessarily brief review of the basic principles of wresting energy from the atom and the difficulties inherent in it, some rather broad conclusions can be drawn. It is clear that in nuclear reactions we have a new and highly potent form of fuel and in the nuclear reactor we have a special kind of "furnace" in which to release the energy of that fuel. The result is heat that can be used to generate electricity or supply industrial process needs. Putting nuclear heat to work involves the same basic principles as are used in applying the heat from coal or oil. What differences there are result mainly from radiation problems.

In spite of early wishful thinking, energy from this new source is not so cheap as to revolutionize the production of electric energy and industrial

heat. In fact, it will take intensive development to bring both fuel costs and capital costs of nuclear plants down to fully competitive levels within the next ten years. Why then all the excitement about nuclear energy?

Recent headlines give part of the answer. As nothing else could the voyage of Nautilus and Skate demonstrate some of the special attributes of nuclear power plants, particularly the ability to yield enormous amounts of energy from extremely small amounts of material. In somewhat less dramatic fashion, nuclear plants will soon completely change the logistics of supplying remote bases such as those in Greenland and the Antarctic, where fuel shipments form one of the biggest problems. And this same characteristic, of packing tremendous energy potential in a small volume, makes it likely that nuclear energy will become competitive first in areas, like some in New England, where transportation makes fuel cost high.

But most important of all, from the energy point of view, our growing knowledge of nuclear reactions pushes into an incredibly remote future the day when the material well-being of the world might be threatened by an energy shortage. It is probably conservative to say that the fission process has multiplied our potential energy resources by at least tenfold and more likely twentyfold. Success in harnessing fusion reactions will make even vaster resources available.

way I look at it—if cigarettes don't get you, radiation will."

The differences actually are two. First, atomic energy seems mysterious and, therefore, probably bad to most people, particularly because they cannot tell when they are getting irradiated. Second, we really know a great deal more about the dangers of it than is the case for other industrial hazards which perhaps are just as bad, but since no one knows about them, no one thinks about them. So far, the AEC's industrial safety record is the best of any industry. There have been few serious radiation incidents. As use gets more widespread, however, you have to worry about more people, less supervision and cumulative doses from different sources. You cannot expect to have no accidents and no incidents forever. There will be incidents, some may be serious; some of them people will just think are serious—they may be just as bad as far as you are concerned. Damage suits are already being filed.

There are two ways to get exposed to radiation. First, entirely from outside the body. You can stand near some radioactive source, or you can be near an X-ray machine. External hazards are easier to handle in general. Most of the time you can monitor them easily with instruments and film badges. You can usually keep the dose rate low enough that one accidental exposure is not too serious, but serves as a good convenient warning. Internal exposure is another thing entirely. Once you get radioactive material in you, it is hard to know how much there is, and hard to get it out. This means any case where you eat, breathe or drink isotopes or cut yourself and get dust in it or any time you are working with isotopes in an unsealed form.

The problem is to somehow arrange the equipment, the people and the working procedures so there is a minimum of chance that anyone gets the stuff into them. It means continual checks, monitoring the work area, watching the procedures, checking the air, the water, clothing, all sorts of things. Depending entirely on the situation, you might have a very simple job of monitoring it or it could be very expensive with much equipment and many people tied up. In all of these cases, one of the big difficulties is the fact that nobody knows at the time that they are getting the radiation unless they have an instrument. The effects don't necessarily show up for many years after you get the dose. It is not at all like falling off a log and breaking a leg so that you know you must go to the infirmary. It can show

Health Problems in Atomic Energy

Digest of an Address at the Afternoon Session
By WALTER R. GUILD, *Radiation Safety Officer*
Yale University, New Haven

■ IT did not take long after the discovery of atomic energy and radiation to find out that it could be dangerous. Except for X-rays and radium, mostly in medical applications, most people were not aware that radiation existed until the end of World War II. Now, of course, everybody knows a little bit about it, mostly just enough to make them somewhat jittery. And the fact that the public is aware of the situation and somewhat bothered about it, makes the subject of safety in atomic industry just that much more imperative.

There is both a real physical hazard and a certain psychological one to overcome. The latter problem is as important sometimes as the actual physical problem. It comes up in two ways particularly. You do not want your employees, or the people working with it or the public around you to be un-

necessarily alarmed about the fact that you have some so-called atomic energy. At the same time you do not want them so casual that they pay no attention to the fact that there is a real hazard. So it takes a careful consideration of the nature of your problem and intelligent application of some good safety standards, not the least of which is educating your employees as to the kinds of hazards you have and what they can do to avoid them.

All this, of course, is little different from any other industrial hazard problem. Many occupations have some kind of hazard and your best safeguard is to have well trained, intelligent and skilled employees. I am reminded of a cartoon that was in *The New Yorker* about a year ago. It shows two steel riggers on top of a new building high above the streets of New York; one of them is saying to the other, "the

up any time later and that makes it tougher.

What kind of doses are considered permissible? There is a National Committee on Radiation Protection which has been in business for about 30 years. They have published standards in a series of handbooks from the National Bureau of Standards. The AEC has wide experience, and guided by the NCRP and their own work, they have now written up a Federal code which governs all AEC licensed isotopes. Several states, including Connecticut, have state regulations as well, based generally on the National Committee on Radiation Protection and AEC standards, although there are some differences. For external exposure, the present so-called "maximum permissible exposure" is now expressed as a cumulative total of five roentgens per year for every year over eighteen years of age. That is, an eighteen year old should have had no previous occupational exposure. By the time he's twenty he can have accumulated 10R; by age 30 he could have accumulated 60R if he had been working steadily. There is a limit of 15R in any one year. It comes out to a practical working average of about one-tenth of an R per week for young people. Some older people could work up to three-tenths R per week.

Now, what kind of a limit is this? This is considered to be the dose which one should be able to get steadily over his whole working life without there being any significant risk that he will notice anything wrong. It is not recommended for the general population for a lot of reasons, however. It is definitely to be considered an occupational risk. Nobody can quote you with any certainty what the risks actually are. Consider this for example. Since 1930 this so-called permissible dose has been lowered in steps from 1R per day, considered acceptable for doctors before that, to one-tenth of an R per day to three-tenths of an R per week; and then about a year and a half ago it went down to one-tenth of an R per week as the average of what was considered an acceptable occupational risk. At present I think the odds are it won't be lowered any further, but it could be. My own estimate of what that means is this: The odds are perhaps as good as 1000 to 1, and maybe a lot lower, that if a person really did get that full permissible dose for his whole lifetime, he wouldn't have any noticeable effects. I don't know whether insurance people think that a very good occupational risk or not.

What can you do? How can you go about setting up a safety program? Any firm that's now using or considering

using radiation in any form—anything from a shoe-fitting X-ray machine, which by the way ought to be banned, to a large scale isotope situation, should obtain expert advice on the nature of its problem. It may be no problem at all, or it could be a real mess and it is not too easy to tell the difference sometimes. You should get this advice preferably from your own expert, but not everybody has one. There are consulting firms and there are some individuals who provide consultation. If you do start using radiation in any way, you should have an individual designated as your radiation safety officer. He should know the whole story. If you get material on license from the AEC you must have such a person. He should be responsible for seeing that whatever precautions necessary are taken and he should have the authority to shut the operation down if it is not right. The AEC always gives such people that authority and you should not try to do anything different. Preferably he should be an expert trained in all these problems himself, but you cannot always get one. If you do not have a man who really understands the whole story, you should have frequent outside advice. That is second best, however. Depending on the complexity of your operation, you may need one or several assistants for him to handle routine matters, such as monitoring,

handling film badges and keeping records. For legal purposes you ought to have records of what the dose levels are everywhere.

As I say, finding trained people for this work isn't easy. The AEC operates three one-year training schools at a Masters Degree level. There are less than 100 graduates per year from these courses; and in general they are snapped up. You are not always able to find one. Well trained engineers and physicists should have no trouble in picking up the general fundamentals of the subject. With a little brushing up or with outside consultation, they ought to be able to handle the problem in some cases. A company-wide educational program is well worthwhile and has been instituted by some Connecticut industries already. Nothing can take the place of a fully trained safety man, and I wish I knew of a good supply of them. I don't think it exists. In fact, this shortage may hold up the whole program more than anything else. Mostly now the safety depends on various degrees of trained individuals in the plants, outside consultation services and inspections by the AEC and by the state.

To sum up, with expert advice there are ways to make most operations in atomic industry almost completely safe. Much of the time it is easy. You do need to know what your problems are and you have to take care of them.

Principles and Industrial Utilization of Radioisotopes

Brief of Address Delivered at Afternoon Session

By OSCAR M. BIZZELL, *Chief, Isotopes Application Branch*

Office of Industrial Development
U. S. Atomic Energy Commission
Washington, D. C.

■ **ALTHOUGH** radioactive atoms are comparatively new to man, they are as old as the universe—countless varieties were born at the dawn of time. Many of these radioactive atoms were very unstable or short-lived and have long since changed to stable forms. Now, only some 50 very long-lived natural radioactive forms remain with us. Recently, however, man has learned to remake hundreds of kinds of radioactive atoms, called radioisotopes, that must have been abundant when the earth was formed. These man-made radioisotopes are important keys in our continuing search for secrets of the universe, for new ways of diagnosing and treating disease, for controlling industrial processes, and for a multitude of other beneficial uses.

It may come as a surprise to some of you that we all live with radioisotopes on a very personal basis. Every single person in this group has about 0.210 microcuries of natural radioactivity in his body. I emphasize the word "natural" because this radioactivity is from processes of nature; not from atomic bomb fallout or nuclear reactor waste. To express body radioactivity more dramatically, about 460,000 atoms are "exploding" inside each of you every minute.

In the realm of artificial radioactivity, man is now able to produce radioactive forms or isotopes of all the ordinarily stable elements. For example, radioactive isotopes of hydrogen, carbon, phosphorus, sulfur, calcium, iron, etc., can be easily made. So diversified

and extensive have been the methods of artificially transforming atoms that we are now able to make many more radioactive forms of atoms than the number of stable ones existing in nature.

Principles of Use

It would be difficult to conceive of a more sensitive or versatile tool than the radioactive atom. The most familiar use of radioisotopes is as sources of radiation. Here, the type of emitted radiation, its energy and the half-life are the principal considerations, and generally the right combination of the three can be found to meet most needs.

The second principal use of radioisotopes is as tracer atoms. The radiation from radioisotopes gives investigators an extremely sensitive means of detecting their presence and hence their movement through physical or physical-chemical transfer, or in a chemical reaction. Here, the chemical form of the radio-material as well as its radiation and half-life determine its usefulness. Since radioisotopes of most of the elements are available, a suitable tracer can be found for most purposes. These principles permit three distinct modes of use.

Effects of Radiation on Materials—

In the first mode, the radioisotope is used simply as a fixed source of radiation much as radium and X-ray machines are used. There is a target material which is to be affected in some manner by the radiation. This material may be a cancer patient receiving radiation therapy, a plastic being irradiated to change its properties, or a bag of potatoes being irradiated to prevent decay; it may be the air surrounding a static eliminator or a phosphor incorporating a radioisotope which excites it to luminescence. The ability of radiation to alter a material is indeed important in many ways.

Effect of Materials on Radiation—

In the second mode of use, the effect of the target material on the radiation furnishes information about the material. Here, the application is based on measuring the radiation which penetrates or is reflected from the material. The radiation-detection device may be a counter or a photographic emulsion, depending on the application and type of information desired. This is the mode of use in medical radiography when a radioactive source replaces the usual X-ray equipment. In industry, it provides an ideal setup for testing purposes and is the basis for most radioisotope applications in product control. Examples of such applications include measuring the thickness of a moving sheet of material, radio-



New MAC Directors who were elected at the afternoon session. Left to right, Kenneth E. Stober, plant manager, The Dow Chemical Co., Ledyard; Vincent J. Roddy, president, The American Screw Co., Willimantic; R. W. Bissonnette, president, The Standard Carl Clothing Co., Stafford Springs and John B. Boden, president, The Mohawk Manufacturing Co., Middletown. H. M. Day, president, Norma-Hoffmann Bearings Corp., Stamford, also elected, was unable to attend the meeting.

graphing the internal structure of a piece of equipment or a casting, and measuring the liquid level in a closed container.

Tracing Atoms Through Their Radioactivity—

In the third mode of use, the radioisotope serves as a tracer to follow the complicated course of individual batches of atoms in physical transfer or chemical or biological reactions. To date, this is perhaps the most important use of radioisotopes. Radioisotopes are incorporated into the materials of interest, rather than used as fixed sources of radiation physically removed from them. The radioisotopes used as a tracer serves as a tag or label which reveals the presence and identity of the material whether it is involved in physical or mechanical transfer or in a chemical or biochemical reaction. The material labeled and traced may be water running through a pipe to an underground leak, sugar being utilized in a human being, a raw product for milk production in a cow's body, or an atom transferring from one kind of molecule to another in a chemical reaction.

Examples of Use

Since there are hundreds of industrial uses of radioisotopes, I have chosen to break down the field into several types of uses and discuss a few representative examples of each type.

*Penetration of Radiation—*The abil-

ity of radiation to penetrate matter has led to the most extensive industrial use of radioisotopes. A part of the radiation is always stopped by the material being irradiated—the amount depends upon the type and energy of the radiation being used and upon the density and thickness of the material and any flaws which may be present.

This is the principle in industrial radiography, which now accounts for a large percentage of the peaceful uses of atomic energy. Radiography with radium, of course, is a comparatively old method for inspecting metal castings and welds for possible flaws not otherwise detectable. Man-made Cobalt-60, Cesium-137, and Iridium-192 are now used in much the same way as radium but are much cheaper and more effective. Cobalt-60 equivalent in radiation intensity to \$20,000 worth of radium can be purchased for around \$100. The radiation from Cobalt-60 will penetrate thicker sections of steel than will the rays from radium.

In another application of this principle the transmission-type thickness gage is being used routinely on production lines to help produce more uniform paper, aluminum, copper, tin plate, plastics, rubber, glass, cigarettes, and numerous other items. Such a continuous, non-contacting method of gaging is especially useful where products are moving rapidly, where temperatures are high, and where products are soft and may be easily marred.

*Reflection of Radiation—*When a

beam of radiation is directed toward a material, some of the radiation is reflected. This principle is serving a useful industrial purpose for accurately measuring the thickness of coatings laid over a base metal.

In principle, the beta particles, or electrons, from a beta-emitting radioisotope strike the surface of the base metal and the intensity of the reflected beam is measured. The metal is then coated with a different material (either metal or non-metal), and the reflected radiation is again measured. The change in reflection is proportional to the thickness of the coating, up to a certain limiting value, and can be measured directly in micro-inches.

Luminescence—The ability of radiation to cause certain materials to emit light or to luminesce, is a long-known and long-used principle. As a matter of fact, the science of radioactivity is a direct outgrowth of early interest in luminescence before the turn of the century.

Ionization—The ability of atomic radiation to ionize most of the materials it strikes can be put to many beneficial industrial uses. For example, static electricity in industry is a menacing problem to production and personnel. Static electricity occurs quite generally whenever the stock of products manufactured and used possess insulating properties. Through their ability to ionize the air at selected points along the moving stock and thus "ground" the static electricity, radioisotopes help to meet this problem.

Sterilization and Pasteurization—Gamma radiation in large enough doses can destroy bacteria in a material without raising its temperature significantly. The absence of high temperatures is quite necessary in the processing of many items such as antibiotics and certain other drugs, and this cold sterilization thus has great potential importance. In addition, large-scale pasteurization of perishable food stuffs such as bananas and potatoes holds interesting possibilities.

An interesting application of sterilization by radiation is the eradication of the screw worm fly. The screw worm fly, of course, is a major bane of both the livestock and wild life industry in the South.

During investigation of this little pest, entomologists learned that the female possesses the unusual characteristic of mating only once during her lifetime. This presented the interesting possibility that if large numbers of the male flies could be rendered sterile and then released to the environment for their normal pursuits, the life cycle of the pest would be interrupted. A fea-



Guest speakers and MAC officials are shown before the start of the evening session. Left to right, John Coolidge, treasurer, Harvey L. Spaunburg, vice president, Governor Ribicoff, Senator Karl E. Mundt, Carlyle F. Barnes, vice president, Norris W. Ford, executive vice president and Vincent J. Roddy, director.

ture story in the June 10 issue of the Wall Street Journal described the extent to which this deinfestation technique is being applied in Florida.

Activation of Chemical Reactions—Activation of chemical reactions is another industrial use of atomic energy that holds many possibilities. It has already been demonstrated that many beneficial chemical and physical reactions will occur when certain materials are subjected to the proper amount of radiation. Many new compounds and, especially, some superior plastics, have already been made in research operations.

Voltage Production—There are several methods for direct production of electricity from the energy released in the decay of radioactive atoms. This energy is extremely minute compared with that from power reactors, but can be used for certain special applications requiring tiny amounts of power. The first of these methods utilizes a basic principle of physics. For example, when a piece of dry plastic or hard rubber is stroked with a wool cloth, the cloth sweeps off electrons from the surface of the dielectric material and leaves it with a positive charge. The wool cloth, of course, holds the negative charge.

Similarly, beta rays ejected from an insulated radioactive source leave it with a positive charge. The useful industrial application of this principle has been realized in the development of a high-potential, low current battery.

Four additional types of radioisotope batteries have been designed and are commercially available. These batteries

can be made very small and they possess the ability to operate unattended for tens of years.

Tracing Atoms—The most remarkable characteristic of radioactive atoms is their ability to constantly send out radiation that can be likened to a radio signal. With the aid of a geiger counter one can follow these signals and thus trace the trail of a radioisotope and tell both the location and the concentration at all times. Indeed, tracing atoms is perhaps the most important industrial use of radioisotopes. A few examples of how the tracer principle is being used should illustrate its importance.

Prior to World War II, cyclotron-produced phosphorus-32, added to the metal mix, was used to study the wear of piston rings. Today, conventional piston rings are made radioactive by subjecting them to neutron bombardment in reactors. In such a bombardment, only one atom of iron in approximately one billion is converted from stable Iron-58 to radioactive Iron-59. The radioactive ring is fitted to the piston using proper shielding and monitoring techniques, the engine is assembled, the lubricating oil is added, and the motor is started. Radioactive iron atoms are worn off the ring and are easily detected in the oil. The sensitivity of the radioisotope method is so high that the wear of the ring can be detected in the first few minutes of running time. One company conducting such a study has indicated that it was able to find out in four years, for \$35,000, what would have required 60 years and cost \$1,000,000 by older methods.

In a very recent refinement of this

technique, the piston ring doesn't even have to be radioactive. Samples of oil from the engine are analyzed for worn particles of metal by rapid radio-activation analysis.

Radiotracers are also very useful in helping to locate leaks. For example, leaks of liquid from one channel to another can be readily detected with radiotracers and, under the proper conditions, can be measured quantitatively. This technique has been widely used in detecting and measuring leaks in heat exchangers and other similar closed liquid systems.

ADDRESS OF WELCOME

By Governor ABRAHAM RIBICOFF

■ I HAVE now been with you for four years. This just covers the four years that I have been Governor. In the event I don't see you next year at this time, it was good knowing you gentlemen. John Coolidge said to me: "I read in the paper this morning what you are going to say to us." I said, "How's that, John?" He said, "Well you told the AF of L-CIO that you were going to say the same thing to the Manufacturers Association." Well I am not going to say quite the same thing, but I will say something that covers the same philosophy, because I believe that you've known me well enough to know this: that I don't have a different philosophy for the AF of L-CIO than I have for the Manufacturers Association.

What I've got to say to the people of Connecticut, I have to say to all the people irrespective of what group they may represent. I have always felt that no public official has a right or should ever give a blank check to any group in our society. The basic job of a public official is always to make his decisions on what he may consider to be for the best interest and the general welfare of all the people. In the event he is wrong, the voters will soon make that pronouncement when the next election runs out.

As I told the AF of L-CIO yesterday, one of the great factors in the State of Connecticut is sound labor-management relationship. I feel that both Labor and Management have reached a sense of maturity in the State of Connecticut where they can work harmoniously together. I also pointed out, and many of you know from talking to me privately, that one of the most important factors to keep an industry sound in any community or any state is labor that is productive, which enables management and industry to make a profit and pay good wages to its labor.

Conclusion

The nuclear principles involved in most of these industrial applications is certainly not profound.

The application of the radioisotope technique to industrial problems lies primarily in recognizing where and how such principles may be combined with the existing art of instrumentation. There can be no doubt that radioisotopes hold many keys to present-day industrial secrets. Radioactivity and the capability of the industrial atom will soon be as familiar to modern engineers as electricity is today.

Another thing I pointed out to the AF of L-CIO, and this is something they don't agree with me in my point of view and philosophy. I told them yesterday that I was definitely opposed to a State income tax and that I had always been opposed to a State income tax. The reason for that is: I find, as Governor, that one of the factors that allows us to bring new industry into the State of Connecticut is that our tax position is competitive with our neighboring states and other industrial states throughout our nation. And in talking to the industrialists who seek to establish plants or branch plants in the State of Connecticut, the productivity of labor and the tax climate is one of the most important factors in influencing an industry to come into our State.

Therefore, it is important for a state to have a sound and fair tax policy. Now, in order to have a sound and fair tax policy, you have to have a sound and good fiscal policy. But let me digress for one moment in what I mean by a sound and fair tax policy. It is a tax policy that makes sure that there is no discrimination against your own manufacturers; and even though the Manufacturers Association did not agree with me during the last Special Session of the Legislature, called to handle the unemployment situation, yet in handling and making up the program that I submitted to the Legislature the one condition precedent in formulating the proposals was to make sure, that by virtue of these proposals, the tax rate on Unemployment Compensation to Connecticut manufacturers would not go up, and in no way would change the balance of Connecticut's position on Unemployment Compensation with our neighboring states. One of the factors, as I say, is the question of fiscal policy. A sound fiscal policy to me is one where you don't spend as much as you take in. My feeling is if the State

of Connecticut doesn't spend as much as it takes in, that, combined with the normal growth of industry in the State of Connecticut could and should enable the State to operate in the next biennium without any new taxes or without any increase in present tax rates.

However, one thing that is so neglected by Manufacturers Association, by Labor Groups and by people as a whole is that everyone's eyes are focused upon the Governor and so few eyes are focused upon individual legislators. I would say that in my knowledge of all the Governors of the State of Connecticut, be they Democrat or Republican, I know of no governor that has not been more conservative in spending than any Connecticut General Assembly. You look at the history of the State of Connecticut, or of governors and general assemblies and see if that is not the case. And yet just look at the record of the past four years: in 1955 the General Assembly upped my executive budget 24 million dollars. In 1957 the General Assembly upped my executive budget 10 million dollars and also did the cute trick of authorizing spending of 8 million dollars without giving the funds, so in two sessions of the General Assembly you had the General Assembly voting 42 million dollars more of spending than the Governor had advocated. Now with the recession that comes in, with the revenue loss, it makes it very, very difficult to make up that 42 million dollars which would have been a wonderful kitty. Yet we tried. In 1955, you may recall, we had an executive order on controllable expenditures cutting the expenditures approximately 8 million dollars. When I saw the drop of revenues in 1957 because of the recession, another 10 percent cut in expenditures was made which we hoped would save substantial sums. The first three months accounting showed around two and three quarter million dollars in savings.

If we in the State of Connecticut are going to have sound industry, we must realize the important role that industry plays in the State of Connecticut, by employing some 45 to 46 percent of all the employable in the State. I want to take this opportunity of paying a tribute to Connecticut Industrial Management. I've known you well, I have worked with you well and I understand the problems. All of us are fortunate in having your clear-sighted, imaginative leadership and your hard work. I am confident the Connecticut industry will continue to go forward. It is my hope, too, that those in Government will realize the role it has to play to keep present industry in Connecticut and attract new industry here.

THE PRESIDENT'S REPORT

Part 1 - Problems and Challenges

In the absence of President Fuller, Mr. Harvey Spaunburg, Association vice president and president of Veeder Root Inc, Hartford, delivered Part I of Mr. Fuller's report at the evening session. Part II of the President's Report which was not heard at the Annual Meeting, gives the highlights of Association Activities during the past year. It appears immediately following Part I.

■ AGAIN, I am pinch-hitting for President Harrison Fuller in making this report to you on the activities of the Association. My words, which are his words, will be very brief.

I am now reading the words of President Fuller:

It has been a privilege to serve as your president. I am gratified for the opportunity, and am very sorry that I cannot be with you tonight.

I mean it sincerely when I say that I never fully appreciated the value of the widely diversified efforts of the Association until I became your president. It is indeed a fine organization which serves a useful purpose to a great many people.

My thanks go to the officers, directors and committee members who have been so helpful to me during the past years, and made the job enjoyable. My sincere appreciation also goes to the staff which does such a fine job for all of us, and are the backbone of our Association.

And now I want you to know really how smart our organization is. We are able to finance a substantial increase in the budget necessary to meet higher operating costs during the 1958-59 fiscal year starting November 1, without an increase in dues. Not only is this good news to our members, but it is also a tribute to the foresight of past and present directors, my predecessors and the present operating head of the organization, all of whom have helped to build up substantial reserves. In spite of higher costs and expanded services, you will not be asked to carry any additional financial burden next year.

That's about as good a way as I know to end my formal report to you.

Now, President Fuller asked me to pass along to you a few personal observations he would like to make on the problems and challenge which face us as manufacturers.

This afternoon, Connecticut industry took positive steps to study and plan

the use of atomic energy in our state. This action is true to the tradition of our association—to keep in step with the times, to improve, to grow, and to build for the future.

Atomic energy offers interesting and challenging opportunities for Connecticut industry and the men and women of our state. Not the least of these, of course, is the opportunity to improve productivity at a time when wage boosts are out-running the increases in productivity.

As exciting as this challenge appears to all of us, there is even greater significance in how the American people feel about the role of industry in the field of atomic energy.

The Opinion Research Corporation of Princeton, New Jersey, a private research organization, asked this question of a scientific sampling of the American public:

"Which way to you think the country would make the most progress—having the government control all development of atomic energy, or encouraging private companies to go into developing atomic energy?"

The vote was better than 3 to 2 in favor of private companies.

Equally as significant, too, are the reasons why the people favor private companies over government control. They gave these reasons for their decisions:

1. Competition—there is more incentive when private companies are competing than when the government is doing it.
2. Business know-how—private companies can always do it better, cheaper, and with less politics.
3. Efficiency—private enterprise is always more efficient than government.

Gentlemen, this is heartening news. And if we could stop there, we might go home tonight with the smug feeling that we're pretty good.

But, as we know, with leadership comes responsibility. If we're going to assume a position of leadership in atomic energy, as in other things, then we have a responsibility to speak out for what we believe. Not only is this essential to the future of industry itself, but I am convinced that in the long run it is in the best interest of the 400,000 men and women in our companies and the people of Connecticut.



Harvey L. Spaunburg, MAC Vice President, delivered the President's Report to members at the evening session.

We have just come through a recession. I say "come through", because all indications are that we are on the way up and out of the slump. This is not to say that we are on the verge of a new boom. I believe the upturn may be slow, and we will find that we haven't solved some of the fundamental problems which caused the trouble.

As the American people look to us for leadership in atomic energy, so they look to us for guidance and direction to avoid further recessions, or violent "boom and bust" reactions in our economy.

What have we learned from this recession? How can we use the mistakes of the past to avoid trouble in the future?

The good common sense of the American people, fortunately for all of us, narrowly prevented a stampede into massive WPA and make work projects which the politicians advocated during the recent slump. The government Pied Piper song that "we can spend your money better than you can" is losing its pulling power.

Labor leaders are out of step with their membership. Union members themselves have learned that a wage increase every year is NOT the way to get ahead. And, when we think of the big bites that inflation is taking out of the workingman's security—his pension, life insurance and savings—we then have good reason to question who is really looking after the welfare of the men and women of industrial America—and how.

As Lemuel R. Boulware, vice president of General Electric, said in a talk in Phoenix last May:

"Too many union officials *like* inflation—mistakenly want inflation—regardless of what they say. It makes them look useful, and the dedicated socialists among them know inflation is quietly the most brutal socializer of them all."

The corruption in high places in labor has filled union members themselves with revulsion. They want, and insist upon, reform. The Kennedy-Ives Bill was recognized by Congress, although only by a scant majority, for what it was—a "fraud" on the public and the man who pays his union dues. The committee appointed by Hoffa to "police" the Teamsters Union drew the caustic comment from Senator McClellan—"Will Hoffa's committee investigate Hoffa?"

Labor monopoly regulation is inevitable. Right-to-work laws are favored by six-out-of-ten voters, according to the Gallup Poll. This law, too, is inevitable because it's for the protection of the individual. Kermit Eby, professor of social sciences at the University



President Harrison Fuller Dies In Hamden

HARRISON FULLER, president of MAC since January 1, 1957, and president and treasurer of the Fuller Merriam Co. of West Haven, died in his sleep Monday night September 22 at his home, 33 Rogers Road, Hamden. He was 66 years old.

Although in failing health since last spring, his death came as an unexpected shock to his host of friends and acquaintances. He had presided at the June 17 meeting of the Board of Directors at the Farmington Country Club and had spent short periods at his office until some three months prior to his death when he was confined to his home with the exception of numerous trips to the hospital for treatments.

Always courageous and optimistic he had dictated his annual meeting address during the last week in August. Since it was to have been his second and final report to members as President of the Association, he had looked forward with high hope to the possibility of delivering it at the evening session of the annual meeting on September 9. His rapidly declining strength during the early days of September made it necessary for Vice President Harvey L. Spaunburg to preside at the afternoon and evening sessions and to read his address which appears on page 24 of this issue of Connecticut Industry.

Mr. Fuller took office at a time when the Association had reached its highest peak of membership, but under his leadership that growth had been continued in spite of the recession. A strong advocate of better communications with the various groups in Connecticut in order to create a better understanding of industry's contributions to the economy of the state, he had made numerous addresses before business, civic and educational organizations as well as participating in many radio and television programs. His enthusiasm to tell industry's story and his belief that large numbers of men in

(Continued on page 46)

of Chicago, and the director of education and research for the CIO in 1948, hits at the heart of the situation when he says:

"Unions are failing at the point of the strongest claim for their existence: respect for human dignity."

No one denies the right of every man to join a union or not, as he sees fit. The right of employees to bargain as a group or the right to strike is not disputed. But when the union "pros" advocate inflation as a way of life, use union funds for personal gains, oppose proper and overdue legislation, and fight to deny individual freedom, then it's no wonder that people have become disenchanted with what they see and hear, and look elsewhere for guidance and leadership.

The stiffening of the attitude of the American taxpayer—and that's everybody—toward increased taxes refutes the theme that the government can spend our money better than we can as individuals.

The hearings in Washington and the weaknesses of labor leaders' economics have brought public concern over the activities and power of labor unions to a point where the American people want action.

Our forward-looking program on atomic energy has captured the interest and support of the average citizen, who believes that we can do the job better than government. Our insistence on sound economics, honest labor unions, and protection of the rights of the individual through such laws as right-to-work, also have the overwhelming support of the American people—in spite of the opposition of union leaders.

It's time to speak out for what is right for *all* of the people. It's time to insist that we can take care of our money better than the government. It's time to say that we want lower, not higher taxes—less government, not more government. It's time to say that we want responsible, restrained union leadership with more concern for their members and the economic future of the land than for their own self interest.

The need for honest, unselfish leadership has never been greater. The lives and security of ourselves and our families are at stake. The opportunity is here for all of us, for the benefit of more than 400,000 men and women in industry, and for everyone in Connecticut. Let's get on with the job.

staff has also worked closely with the State Tax Department and the Office of the Attorney General on a revision of Sales and Use Tax Regulation No. 5, in order to bring it more in accord with the recent decision of the Connecticut Supreme Court in the United Aircraft case. This decision broadened the scope of the so-called manufacturer's exemption.

Federal Legislation

Your Association continued its long standing practice of checking daily all proposed federal legislation affecting industry in order to keep the members of our Congressional Delegation promptly advised of the position of Connecticut industry with respect to such proposals. Each week during the past session of Congress, we have pinpointed in our Congressional Bulletin for our members the features of such legislation and legislative proposals which we thought should be brought to their attention. In these weekly bulletins we have frequently asked our members to write our Congressmen and Senators to urge passage or defeat of certain measures which we felt would either materially benefit or severely handicap the smooth functioning of business enterprise.

Through our weekly publication, "Connecticut's Observer in Washington," we have sought to reflect some of the thinking of our Congressional delegation through reporting their statements to the Washington writer of this publication.

The General Assembly — Special Sessions

Normally there is nothing to report during even numbered years with regard to activities of the Connecticut General Assembly. However, since our last meeting, there have been two special sessions of our legislature which call for some comment. In the Fall of 1957, the legislature met in special session to consider and alleviate the plight of the farmers who had suffered grievously because of the very dry Summer. In addition to farm relief measures there were approximately forty other bills passed, many of which corrected errors or omissions of the regular session of the General Assembly. Of special importance to industry was the establishment of a Tax Study Commission with a substantial appropriation, to study our entire taxing system with emphasis on the property tax.

In addition to the bills passed, the special session set in motion three proposed constitutional amendments. One of these proposals would establish

Part II - Association Activities

■ NOW to recount a few highlights of the past year:

Membership Activities

In spite of the substantial recession most of you have experienced, unhappily, since our last meeting, I am pleased to report that our membership now numbers 1771 companies. Admittedly our membership now employs fewer people than last year—a hard fact which will be reflected in substantially lower dues income in 1959.

Although our field representative brought in only 164 member applications since our last annual meeting as compared to 228 I reported to you last year, I feel that he has continued the high standard of performance set in previous years because of the substantially greater amount of time he spent calling upon members rather than upon prospective members.

The increase in membership calls was due to the belief that the Association should seek to discover difficulties encountered by members during a period of business recession and render assistance whenever possible, rather than to spend the usual amount of time soliciting new members.

Taxation

During the past year, as in 1957,

your Association has continued to publicize and press for the need of basic reform in the income tax laws such as would be provided by the Sadlak-Herlong bill. We also inaugurated a new series of bulletins, describing the tax structures of the various states, which have met with gratifying response, and are being continued. To date these bulletins have covered the tax structures in the following states: California, Georgia, Illinois, Indiana, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New York, Ohio Pennsylvania, Texas and Wisconsin.

We have continued our sponsorship of activities seeking to clear up the tax responsibility of manufacturers selling in interstate commerce which are expected to come to a dramatic culmination this fall when the United States Supreme Court hears two cases involving the Georgia and Minnesota income tax laws. Our staff and Taxation Committee are working closely with the State Tax Study Commission which is required to file its report and recommendations with the General Assembly by next March 15. In this connection, we have, at the request of the Commission, gathered certain basic information from our members with respect to property values and the property assessment in the various towns. Our

annual sessions of the General Assembly. This proposal was rejected by the people of Connecticut a few years ago. The agitation since then has been coupled with a restriction that such extra sessions be confined to budgetary matters. The present proposal, however, does not contain that restriction. I continue to take a dim view of annual sessions as I stated in my last year's report, because of the extra expense burden and the business uncertainty it creates. If annual sessions are voted they should be restricted to budgetary matters.

The second special session held last Spring was convened primarily to grant extended unemployment compensation benefits to those who had been out of work long enough to have exhausted their regular allotment of benefits. In addition to providing for such extended benefits, almost a million dollars in cash was appropriated and about twenty-four million dollars in cash and fifteen million dollars in bonds were made available to the State Development Commission to redevelop commercial and industrial areas, but no action was taken to encourage existing industry.

Industrial Relations

The Association has continued to give valuable advice and information to members on all phases of industrial relations. Our file of arbitrators, with their strengths and weaknesses, is continually expanding. Members are reporting an ever increasing number of arbitration decisions with comments on and reaction to the arbitrator involved. This enables us to pass along quickly to a company seeking an arbitrator, the latest reliable appraisal of the arbitrator being considered together with any indication of bias or undesirable approach to certain types of grievances.

Many employers have found it extremely helpful to discuss with us a specific grievance and the contract terms of their labor agreement before making a final decision. To facilitate that service, we have maintained and kept current our file of union contracts. This discussion of internal disputes or issues has been found extremely helpful to employer members who have no union. Information concerning general practices under stated circumstances is continually sought by our members. We are happy to report that we enjoy unusual cooperation from all our members which enables us to have such information available.

We completed our second annual Employment Practices Survey and have distributed the results. They furnish a useful guide, not only to present prac-

tices but also to individual trends and the development or expansion of new practices.

We continue each month to report three arbitration awards in our magazine, CONNECTICUT INDUSTRY, under the title "How Would You Decide?" The comments, questions and general response to this department have been gratifying.

We also prepared and distributed a booklet setting forth the "Connecticut Workmen's Compensation Act in Everyday Language." Because of the technical nature of the law itself, we thought such a booklet written in non-technical language, would be useful to our members. Its reception and the requests for copies from schools and students as well as from our members have amply justified our decision and effort.

Our Industrial Relations Committee has given us extensive assistance in all of these endeavors. It is continuing to explore and develop further projects in the Industrial Relations field which will be useful to our members, large and small, organized and unorganized.

Group Insurance

Our various group insurance plans have continued to grow, although at reduced pace, due in large part to the recession. At the present time the group life insurance plan covers approximately 25,000 executive and supervisory people who are employed by the 1,000 participating member companies. The volume of insurance is now in excess of \$180 million. During the year 1956-57 group life claims reached an all-time high of \$1,400,000 or \$565,000 more than paid to beneficiaries last year. Last fall the retroactive rate credit amounting to \$750,000 was distributed to the insured companies.

Under the weekly indemnity plan, the maximum for which any one individual may be insured was raised to \$60 per week effective December 1, 1957. Last year a retroactive rate credit was issued to participating companies which amounted to approximately 35 per cent of premiums paid. During the current year, under this plan as in the group life plan, claims are reaching an all-time high.

In the two remaining group plans, the Major Medical and the Supplemental Hospitalization plan, no changes in coverage have been inaugurated during the year. However, steady growth has been in evidence.

During the spring of 1958, after an exhaustive study that ranged over a period of a year and a half, the Association inaugurated a travel accident plan for employees of member com-

panies. Under this plan an employer may cover certain or all of his employees for various amounts of insurance while they are traveling on company business anywhere in the world. This coverage not only protects the employee while he is in a public or private conveyance, but also gives him twenty-four hour protection while he is away from his office on official business for his company.

There are many variations to this plan and it can be fitted to each company's needs and desires as far as travel accident insurance is concerned. Since this insurance is more or less tailor-made, a great deal of time is required in discussion and study. Yet, at this time, approximately 40 companies have indicated their desire to be included. After the issuance of the travel accident policies, the administration will be handled by the insurance department of the Association.

Health and Safety

The work of the Association Health and Safety Committee, which seeks to improve health and safety practices among member companies, has continued under the auspices of the Insurance Department, with some four special bulletins being developed and distributed to members during the year. Thus far a total of 15 bulletins, each prepared by an expert in the field of his choice, have been prepared and distributed since the Committee of twelve physicians and one layman was launched three years ago. To our smaller members who do not have ready access to this type of technical information our specialized health and safety bulletins should be of great value.

Transportation and Foreign Trade

Throughout the past year we have done everything possible to insist that common carriers, both rail and motor, hold the line against further inflationary rate increases. In many instances we have taken a position of leadership in rallying shippers to protest rate increases, not only in Connecticut but throughout the New England area. In general our efforts have been marked with considerable success. We have worked actively alone and with other groups toward a solution of the problems besetting our New England railroads. We are a party of record in opposition to exorbitant rail freight rate increases on less-than-carload freight now before the Interstate Commerce Commission. Our contribution in that respect has also been constructive. We have placed before the Com-

mission a new approach to the classification and rate structures covering less-than-carload freight which, if adopted, would go far toward restoring a healthy and efficient less-than-carload freight service for the use of our manufacturers. We have also aided in the development of a shippers cooperative association which we feel will benefit those of our members able to use it by lowering their cost of distributing goods in the Pacific Coast States.

Our transportation department has continued to service hundreds of requests for freight rates, classification ratings and many other types of transportation information.

Although there has been some slackening in the volume of Connecticut products moving in foreign trade, the requests for advice on foreign trade problems and guidance in the preparation of documents and the submission of export licenses have continued at a high level. Our translation service has also continued to work at capacity during the year.

Both our Transportation and Foreign Trade committees have regular meetings throughout the year giving valuable advice and assistance to members and guidance for the overall activities of the Association in the transportation and foreign trade fields.

Public Relations

The Association's public relations program this year emphasized two-way communication to citizens throughout the state. Over 180 speaking engagements have been scheduled this year—an increase of more than 300 per cent over last year's record. A substantial number of these speakers were booked to talk on subjects closely allied to Association objectives such as industrial climate, tax information, right-to-work law and the link between productivity, wages and inflation. Even though the Speakers Committee has been increased to 76 participants, it is our hope that many more member executives will join the Speakers Committee in order to increase its effectiveness during the coming year.

Speaking topics in the economic area are presented under such titles as "How Prosperous Will We Be In Connecticut?", "What Is Causing Our Economic Troubles?", and "What Is the Future For You In Connecticut?" In most instances, questions from the floor have been encouraged directly after the speaker's presentation. Reports from both organizations and speakers indicate public support for the Association's views expressed by the speakers.

The Association's new brochure, "A

MANAGEMENT GUIDE TO PUBLIC RELATIONS," distributed late in August, was written especially for the small and medium-sized manufacturer. It incorporates many suggestions by the public relations committee in cooperation with the Association's Public Relations department. Another booklet, "WILL YOU BE FREE TO CELEBRATE CHRISTMAS IN THE FUTURE?", originally published on a cost basis by Hamilton Standard Division of United Aircraft, was mailed to members with a covering letter suggesting that this vital piece of information on communism would be ideal for distribution to employees. Orders for several thousand of these booklets have been received and will be placed with the printer after the closing date for orders on September 15.

Other activities have included public relations bulletins to the membership, a monthly column in CONNECTICUT INDUSTRY, and a series of television programs. While brief TV "Spot News" and special one-time programs have been developed and broadcast over station WNHC in New Haven and two Hartford area stations, six 15 minute features were arranged and broadcast as a part of the WNHC-TV Sunday series entitled, "This Is Your Connecticut." Many economic facts were thus highlighted by MAC speaker panels on 12 o'clock Sunday noon programs on June 22, 29, July 6, 13, 20 and 27. The response of newspapers, wire services and radio and television stations to Association news releases and feature stories is tangible indication that relations with these important media of communication are favorable.

Industrial Development

In a very real sense the Association's industrial development department differs widely from other departments, commissions or committees functioning under the banner of industrial development. For the most part the industrial development activities in other organizations center largely on the acquisition of new industry and the expansion of existing industry, with all of the research, planning and selling activities necessary to the successful overall expansion of industry.

In order to avoid duplication of services offered by other development groups our development department endeavors to render services not normally supplied by other agencies. The terms "Miscellaneous Promotional Department" or "Where To Find It Department" might be even more meaningful names than industrial development, because of the diversified nature of service offered by this department.

On the average, about 40 to 50

per cent of the time of the staff involved in this department is consumed in the planning, compiling, publishing and financing through advertising, the Association's monthly publication, Connecticut Industry. Now in its 36th year of continuous publication, Connecticut Industry, is the only exclusive industrial magazine published in the state which seeks to promote the interests of Connecticut's manufacturing industry.

Because of its widely diversified editorial content and its large readership among top and middle management who dictate purchasing policy, the magazine is an ideal advertising medium for all companies desiring to sell goods or services to Connecticut's \$2 billion industrial market. Judging from results at the end of the first nine months of the 1957-58 fiscal year, this year's advertising income will equal or surpass last year's all-time high—and this in spite of a substantial nationwide reduction in business magazine advertising due to the recession.

The broad variety of miscellaneous services offered through the Industrial Development department include advice as to sources of working capital, new products, mailing lists, factory space, machinery and equipment, market data, competent consultants, emergency suppliers and services, subcontract work and facilities, going businesses for sale, and many others.

This department also cooperates with a number of non-member organizations such as the Connecticut Federation of Women's Clubs for whom it has arranged one or more "Industry Day" tours through Connecticut's factories each year since 1949, the most recent one being held last April at the Royal Typewriter plant in Hartford. It cooperated with the Connecticut Development Commission, the Connecticut and Hartford Chambers of Commerce in staging the 3-day New England Regional Business Opportunity Conference at the State Armory on July 9, 10 and 11. The staff member in charge also holds membership in and cooperates with the Connecticut Council on Education and the Council for the Advancement of Economic Education, and has corporate duties as secretary of the Association.

General

In spite of the recession the requests for Association services this summer have been substantially above normal, which lends proof to the fact that the Association, with its widely diversified services, plays an important role in the industrial life of Connecticut in periods of recession just as in periods of record activity and prosperity.

THE ROAD TO FREEDOM FOR AMERICANS

Brief of Address Delivered at Evening Session

By Honorable KARL E. MUNDT
Senator from South Dakota

■ IN my opinion, the most significant development of the past twenty-five years, insofar as businessmen and industrialists like you are concerned, can be reported and recorded by simply reversing the order of five simple words in the English language. About the time I went to Washington, or at least about the time I first got active in campaigning for a Republican office in South Dakota, a quarter of a century ago, it could be said with complete validity that economic conditions determine political decision in America. And every candidate for major office laid the greatest stress in his campaign on economic conditions and economic opportunities. We had slogans like "the full dinner pail," "chicken in every pot" and "the car in every garage." Nobody could deny it was an axiom of politics that economic conditions determined political decisions. To a considerable extent that is still true, but it is far more axiomatic tonight to say the same thing in a different order. It is far more axiomatic tonight to point out that political decisions today determine economic conditions. And pondering that, I think we recognize the change that has come over us in a quarter of a century.

Today, when political decisions are the master force in determining the economic conditions of every enterprise recognized here, it behooves us to take another look at our responsibilities as free men and women. You know that is true. You know that a bad mistake in Washington which leads to war upsets and undoes and undermines every single plan and blueprint that you make. You know that a bad decision from the standpoint of tax policy, tax legislation enacted for punitive purposes, tax legislation enacted to produce votes instead of revenue, tax legislation enacted to get even with somebody you don't like, tax legislation designed to drive out of the economy certain types of activity, bad tax legislation can destroy the best plans that you can make. Governmental policies leading to wildcat inflation, destroying the value of the last honest medium of exchange in the world, can turn to ashes in your hand your brightest hopes.

Bad Government and good business cannot operate in America simultaneously for very long. If you accept that



Senator Mundt's featured address was on the important topic, "The Road to Freedom for Americans."

as I think you must, inevitably I think you must accept the following: that it is just as important for industrialists to become familiar with the mechanics of self government as it is necessary for them to become familiar with the mechanics of production and distribution and cost accounting, because unless you are sure that you understand the mechanics by which public decisions are made, you cannot participate effectively to bring about the decisions desired, or the decisions which are good for business and for private enterprise.

Congress, after all, is virtually nothing but a great national jury which decides between advocates of different points of view—the advocates of labor, of management, of public ownership, the advocates of private enterprises, of reckless spending, of prudent economy, of increased Government authority in size, in power and scope, and the advocates of the limitation of powers of the central Government. All of these advocates bring their pleas and persuasive representations to the jury known as your Congress. So I think that all of us have to learn carefully one of the first rules that any good Law School teaches its law students, that is, that it tells the embryonic lawyer: "Sir, you

are never going to win many court cases when you let your opposition select the jury". And so frequently businessmen have concerned themselves primarily with electing the captain of the team, the foreman of the jury, the President of the Country while letting the other fellow elect the jury. Then they wonder when they write to Congress that they do not get results.

I think it is important that we recognize clearly in our minds that what Congress does and says and enacts, writes the policies that rule America, and Congress understandably responds to its friends and goes along with those who have helped the jury get their positions of responsibility. We worry about Quemoy, about the Pescadores, about Lebanon, about the Gaza strip, about the victories of the cold war. And worry we should, because realistically they are your dangers, but despite them all, my good friends, despite all of the troubles and complications and confusions of this tricky world in which we live, with half the human beings aligned against the other half, I cherish a conviction. Here it is. Despite all those difficulties, I believe, the decisive battles for freedom in our generation are going to be won or lost on American soil—and they are going to be fought and won by ballots, rather than by bullets. That, too, turns our attention then to the problem of the mechanics of government.

I said earlier that this is a bipartisan problem that must find a bipartisan solution, and I say that, in part, because unhappily party designations no longer pinpoint as clearly as they used to, or as clearly as they should, different attitudes of Americans towards the major economic and political problems of our times. I say that, in part, because in our archaic and frustrating Electoral College system, which places a premium on appeals to mass votes and to big populations in crowded cities, and to pressure groups, coupled with the adherents of the Old South to a one-party concept of partisan politics, combines to defeat those who would limit the size and the scope and the cost of the Federal Government to the essential functions of the central state.

True, we do have two great bodies of public opinion in America; true we have bodies of opinion differing sharply from each other in their approach to

the public problems of our days, even those involving the scope and cost of the Federal Government. While on many of these issues in Congress those in the Senate and the House merge across party lines to take a unified position. While in many of these issues, those mergers across party lines represent a fairly even cleavage between two points of view in Congress, it should become increasingly apparent to everybody who reads the news and watches the flow of history that it is increasingly difficult to define these attitudes today by existing party labels, or to array them against each other in our great Presidential campaign. Actually, as I have talked this over and discussed it and met with groups in states all over this Union, I am convinced tonight that the words "Federalist" and "Constitutionalist" much more clearly designate these different groups of opinion in America today than do the words "Republican" or "Democrat".

In the main those who cherish the concept of having the Government do more and more for more and more and those who embrace the concept that when there is a problem Uncle Sam should solve it are in the so-called Federalist camp. That these functions should be federalized I think is a modern version of what we used to call perhaps "The New Deal" and "The Fair Deal", and some who join that camp are Democrats, and some who join that camp are Republicans. There is another camp that holds to constitutional provisions, that holds to the opportunity system, which for so long did so much for so many on this soil, which believes in private enterprise and the reward of merit systems, which believes in limiting the power of the politician in the central State to the essential functions of Government. I call them "Constitutionalists" because it's all written in the greatest charter of freedom that any human beings ever had, the Constitution of the United States which still provides the answers if we will read the rules. Those it seems to me divide better than the words "Republican" and "Democrat" the two different bodies of opinion in this Country.

I think, in the main, there are three basic reasons for the fact that we move so rapidly in America away from those great bastions of freedom to which I think we should add hereto. Let me suggest them to you. I think the first is our Electoral College. Now we are talking about the mechanics of self-government, now we are talking about the mechanics of freedom which we must understand and master and control, if the mechanics of production in your plant are going to mean anything

more than temporary employment to your workers and permanent source of concern and worry to yourself. Originally in this country, the Constitutional forefathers conceived that members of the Electoral College would be chosen as our Congressmen by districts and that they would go to the Electoral College and vote the preferences expressed at the polling places selecting them. We hadn't been a nation very long, however, when a group of city politicians in one state or another conceived the idea that if they would pledge the Electors to vote in a block so that whoever receives the majority of votes would have at the Electoral College not only all the electoral votes that he received, but all that the loser received also on a winner-take-all basis, that State would have more influence and authority at the Electoral College level. Less than five years afterward, every State in the Union was compelled in self-defense to adopt the winner-take-all electoral block system.

I now give you a secret from inside the political Arena. Now it is an axiomatic fact that the Electoral College vote in eight big States, controlled as it is by the mass population of ten big cities, are a "must" for a candidate to be elected President. New York State has 45, Pennsylvania and California 32 each, Illinois 27, Ohio 25, Michigan 20, New Jersey 16, Massachusetts 16. Now when you get to be a politician you aren't too much interested in getting nominated except for one thing,—you want to win. When a man runs as a Republican or a Democrat nominee for President, he doesn't run because he wants to lose; he wants the nomination so he can win. If you are Democrat and can get those ten cities in those eight States, you're in because the solid South can be counted upon to deliver 122 votes. These eight States control 213, which with the South's 122 votes makes 335 votes that you get at the Electoral College, and you need only 266 to win.

If you are a Republican, you have to have the same ten cities, the same eight States, and pick up votes from areas which are normally Republican in the North to establish the necessary extra 110 votes you require to win the election. Included in that is a very serious injustice, it seems to me. Connecticut has eight electoral votes, New York has 45. Every voter voting in New York casts five and a half times as much influence as a voter in Connecticut. Is there any good reason for that? Are there many here who are willing to admit tonight that the worst voter in New York is five and a half times better than the best voter in Connecticut? But that's the fact.

Now you wonder what's wrong? You wonder why pressure groups exist? You wonder why it is hard to achieve the fine objectives that Mr. Spaunburg talked about? The Electoral College System has become archaic under our new concepts of metropolitan cities and pressure groups which inevitably have arisen to take advantage of this shortcoming in our mechanisms of self-government. The second reason is that the Electoral College system, bad as it is, is able to produce bad results more adequately because of this division between conservatives existing by the imaginary Mason-Dixon Line. I happen to be the first, and I guess the only Republican member of the United States Senate since the War between the States, invited to address a joint session of the Legislature of the State of Mississippi in Jackson, Mississippi, on Abraham Lincoln's birthday. I talked to them like I am talking to you, pointing out how absurd it was for a whole section of America to deny itself the two party system.

I pointed out to them that, if in the South, somehow or other a two party system could develop, it would take some of the pressures off the "body politic" which have developed as a consequence of this Electoral College system. They know better than I that there is a great deal more similarity between Republican John Bricker of Ohio and Democrat Harry Byrd of Virginia, closer together by far than exists between such two Democrats as Humphrey, let us say, of Minnesota and Byrd of Virginia, or between two such Republicans as Bricker of Ohio, and Javits of New York. They know that party lines don't spell the difference any more, but they have this imaginary something called the Mason-Dixon Line which since the War between the States has kept a second party system from developing in the South. Let me point out precisely why. Inevitably, these two mechanisms of a great one party area, of a party split between people who think alike and act alike and vote alike in Congress, but who cannot vote alike for President in presidential elections because of geographic location or party designation, has given rise to political mechanisms in this country which are close to dominating both the major parties of the Country tonight. Together, they are exercising more influence, three times over, than the National Manufacturers Association and the National Chamber of Commerce and other management organizations.

The drive toward the left I am fearfully afraid is going to succeed. It's something I don't want to happen. It's something I have been talking against up and down the breadth of this land

since my second year in Congress, and I was elected twenty years ago. I think we should know that the drive to the left is spearheaded in America by some very brilliant, able, and I am willing to include the word "patriotic" Americans, although I think they are misled. They are organized together in an organization called "Americans for Democratic Action." I induced Walter Reuther before the McClellan Committee to testify under oath about sixty days ago to a confession of the fact that over a third of the resources and money received by Americans for Democratic Action are contributed by his UAW alone. I also got him to admit that every dime that they contributed to Americans for Democratic Action was taken from the American working man and woman by compulsion as part of the tax to work in a closed shop. It follows, obviously, that working hand and glove with the brain power conceiving the program, is the manpower which manifested itself so adroitly and effectively in a State somewhat north of you only yesterday.

The greatest political force in America today is the CIO-PAC. This force has available to it at least six times as much money now as the Democratic National Committee and the Republican National Committee combined are permitted to spend legally between now and November 4th when we vote in this election. I don't complain about it, I simply point it out. Under Walter Reuther PAC believes in a slightly different type of economy from what we have today. He envisions an economy in which the laboring people replace Management, and Ownership and Bosses. I don't care whether you call it Socialism or Statism or Fabian Socialism or Communism—I don't know what to call it. It doesn't do any good to call it dirty names. The only way you win that kind of fight is to challenge that kind of organization with organized resistance, or else make surrender and capitulation as easy as possible in your individual case.

Allied with that organization, for an altogether different reason, is every big political machine in the ten big cities which are the target of both Republicans and Democrats in every presidential election from New York City, Philadelphia and Pittsburgh to Newark, Detroit and Boston and Cleveland and Chicago, Los Angeles and San Francisco. Give me them and I am in, and so is anybody else. If you are smart enough to be a candidate for President, you are smart enough to ask yourself, not the question "what's good for the Country," not the question "what do we need for better business," not the question "how do we continue

our great American opportunity concept," you ask yourself "what do I have to say, what do I have to do, what do I have to promise, who do I have to lure to carry the ten big cities with the eight blocks of State electoral votes to win?" Every big city machine in every one of those big cities works in close collusion with the CIO-PAC and with the braintrusts in the ADA, because they want to win for purposes of political patronage. No use being a ward captain in a city if your side doesn't win. So they want to work with the team going places and getting things done. That puts three groups together. And they are aided by a fourth. Racial and ethnic blocks in this Country are appealed to by people in public life, and by these three other groups. Promises are made and pledges are given, to line up votes where they come in bunches like bananas, to get them to the polling places in the towns that count.

I submit to you that demonstrably to any man with stomach strong enough to study the raw facts of American political life today, it can be proved that a third force in American politics has become the dominating factor—a third force, lead by the braintrusts I've suggested, supported by the organizations and the people whose names I've given you. What do they expound? They are not Facists, they are not Communists—they are Americans who believe somehow that folks like you cannot be trusted in jobs like yours. They are a strange sort of human being who believe that people in my profession contain all the brains and all the ethics available to human beings, and that they can take a precinct man and make out of him a senator or a cabinet officer, or perhaps a President, and by giving him power, everything good will be done for everybody. It doesn't work, but they don't know it doesn't work and so they move in the direction of socializing America a little bit at a time.

Do you know what the target is in the next Congress? The next big target in America is going to be the energy base of our economy. These men are smart. They know that once they get the energy base of America, they can make every proud and haughty entrepreneur on the campus of Yale University tonight come crawling to their office to kiss their boot or perish.

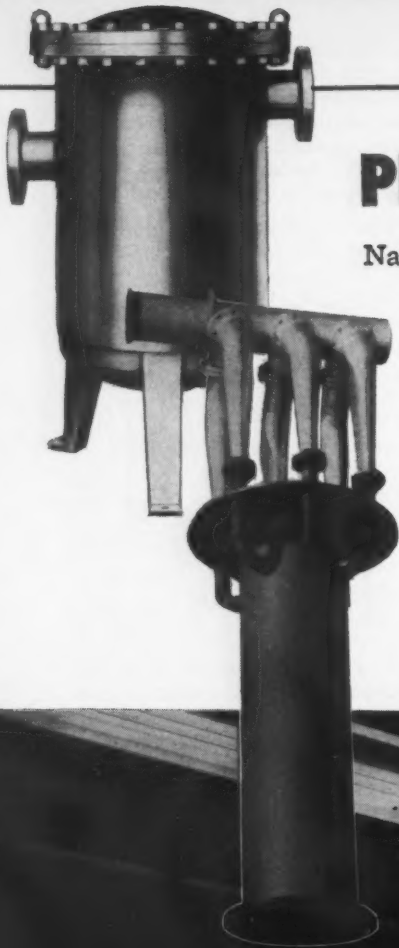
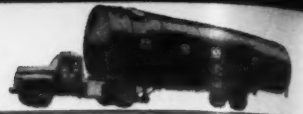
What is the energy base? There are five elements in the power package—hydroelectric power, atomic power, power from coal, power from natural gas, power from petroleum. Let them get complete control of any of the five and the other four cannot compete and live. Once you have politicians in jobs

like mine controlling the entire energy base, that drives every wheel and turbine and every piece of equipment in your plant, you've lost your freedom in America, because we then can call the tune. And they've come pretty close a time or two.

I had a most fascinating experience a couple of years ago in Cincinnati, Ohio. I was invited by General Electric to come and talk to six thousand of their employees at an annual employee smorgasbord at night. They asked me to come and talk about Republican concepts and Republican policies. I said "I talk to you as a Midwesterner. Just one way of talking out there—just straight out." So I said, "Fellows, I am against one of your major platforms. I am against you because I get petitions from your Union and your Union leaders urging me to vote for Hell's Canyon, urging me to vote for public power, urging me to vote to put atomic energy in the hands of the politicians, instead of private industries. But I am against you on that. But I don't want you to think that I am just a two-horn monstrosity from the Middlewest. I might not be as bad a fellow as you think, because I tell you something, boys, I'll be with you in round two of your fight."

It was a well-arranged meeting because they had five thousand dollars worth of door prizes and didn't give any of them away until the speaking was over. Everybody had to stay. So I knew I had them for a while. I said, "I'll be with you on round two of your fight." There was enough lubricated tongues around so half a dozen guys said, "What do you mean about round two?" I said, "I am glad you asked that question, because I am going to be with you in round two. I am going to fight you just as hard as I can while there is a chance for success to stop the forces of the left from taking over the energy base of America; from this socializing and nationalizing and public-ownershipizing the power institutions. Unless you and I do something different than you and I have been doing in our political activities in the past twenty years, the politicians have got to win. They understand the mechanism. They've got the machinery. They have these built in groups. They have the money. They know what they want. They've got the capacity for leadership and the courage to fight. How are you going to stop them? So I say, if they win I am with you in round two. It's obvious, or should be to any American, that the only justification in the world for cheap public power and public ownership is so electricity can flow out of its conduits as

(Continued on page 48)



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News Forum

This department includes a digest of news and comment about Connecticut industry of interest to management and others desiring to follow industrial news and trends.

♦ **LEETE P. DOTY** who has filled a succession of key management and production posts for Pratt & Whitney Aircraft division of United Aircraft Corporation, has been named assistant general manager of United's Sikorsky Aircraft division, Stratford. The appointment was announced by Lee S. Johnson, general manager of Sikorsky.

Mr. Doty is presently a senior production executive at the main plant of Pratt & Whitney Aircraft. He previously managed the big Pratt & Whitney Aircraft branch plant in North Haven and the branch plant in Southington. At Sikorsky he succeeds Robert A. Aspinwall, recently made general manager of United's Norden division.

♦ **PETER M. MOFFITT** of Hamden, has been appointed manager of the Connecticut Development Credit Corporation with offices in Meriden, according to an announcement by Frederic E. Hudson, president.

In his new position, Mr. Moffitt will administer the affairs of the CDCC which assists in the financing of worthwhile growing enterprises in Connecticut which are unable to obtain some of their credit needs through normal sources. The CDCC is sponsored by private industry and banks in the State, and since its organization in 1954 has loaned or made outstanding commitments of over \$2,000,000 to help develop Connecticut industry.

Mr. Moffitt is a native of New Haven and comes to the CDCC from the Connecticut Hard Rubber Company, New Haven, where he was sales manager for Specialty Products. Previously, he was associated with the Hanover Bank, New York, as a credit supervisor and traveling representative. He received a B. A. degree from Yale in 1948 and has also taken advanced courses in banking and finance at New York University and the University of Wisconsin.

♦ **DUNHAM-BUSH, INC.**, West Hartford, has introduced the new 'LRCU'—a large remote condensing unit, available in five models with ratings from 10 to 30 tons.

The unit consists of a BC-P Remote Air Cooled Condenser having a compressor, receiver, electrical controls and other refrigeration accessories mounted within the casing of the BC-P unit. Compressors can be single or dual; where dual compressors are used, completely separate refrigeration circuits are furnished.

Each refrigerant circuit is complete, having its own set of components, and is supplied with compressor, motor, magnetic starter. Units are shipped with a holding charge.



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♦ A TRINITY COLLEGE student has been named the second recipient of the Edward M. Flannery Scholarship, awarded by the Purchasing Agents Association of Hartford County.

Gordon W. Clarke, Jr., son of Mr. and Mrs. Gordon W. Clarke, West Hartford, has entered his junior year at Trinity.

The Flannery Scholarship has been established in recognition of the late Mr. Flannery's long, interested and active participation in the Purchasing Agents group and his awareness of the difficulties faced by young people in acquiring higher education.

♦ HOWARD A. JOHNSTON, president of the Marlin-Rockwell Corporation, Plainville, has announced the appointment of Berton E. Rogers as corporate works manager for the corporation.

Mr. Rogers has been employed by the Sperry Rand Corp. where he was in charge of manufacturing operations for four plants of the Vickers division. He was formerly in charge of manufacturing for the automotive division of the Motor Products Corp., Detroit, Michigan.

Mr. Rogers also spent many years with Olin Industries, Inc., in various capacities including his last position as works manager of the Winchester Repeating Arms Co., New Haven.

♦ JAY E. RAND has announced his retirement as vice president of the Bon Ami Co. and its affiliates, the Orford Soap Co. of Manchester, Bon Ami, Ltd., of Canada, the Bon Ami Co. of Australia, the Whitehall Mining Co. of Keene, New Hampshire, and Spruce Pine of North Carolina.

The appointment of Ralph A. Schwaikert as his successor was also announced by Mr. Rand. Mr. Schwaikert has been serving as assistant manager of the Manchester plant.

Mr. Rand has been with the company for the past 37 years and in his present position for the last 17 years. As vice president, he was in charge of all manufacturing and mining. He was also a member of the board of directors of the Bon Ami Co. and its affiliates. Mr. Schwaikert will take over these duties.

♦ THE WHITON MACHINE COMPANY of New London has announced the development of a new line of vertical steam turbines. The new turbines, in the 100 to 1000 horsepower range, are especially designed for vertical pump drives and similar power supply applications. Having extremely small mounting diameters, the new vertical turbines are said to allow greater freedom of location due

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to minimum installation space requirements.

Construction features of the new vertical turbine include horizontally split steel casing with steam inlet and exhaust connections in the upper half. The lower half has access openings in the supporting shell for ease of inspection of carbon ring packing, radial bearings and adjustment of speed changer. Bolted to the lower half casing is the steel sump tank and shaft housing. The integral lubricating oil sump tank has ample oil capacity with submerged oil pump suction.

♦ **ESTABLISHMENT** of a centralized department to provide broadened customer service has been announced by Norman I. Schaffer, president of Consolidated Diesel Electric Corporation, Stamford, major manufacturer of aircraft and missile ground support equipment.

Designated the Con Diesel Customer Service Department, its activities will be directed by Jack Massar, formerly manager of the company's parts and service department.

Mr. Schaffer said the new department "will effectively pool our engineering and technical service resources, assuring Con Diesel customers of more rapid and fully integrated assistance on service matters, particularly in the field of missile and aircraft ground support."

Functions of the new department will include development of spare parts support programs; indoctrination and instruction of customer personnel in the operation, maintenance and overhaul of Con Diesel equipment, either by classroom instruction or on-the-job training by field service engineers, and publication of equipment manuals as well as product development, retrofit and overhaul programs.

♦ **THE APPOINTMENT** of Thomas E. Sherer of West Hartford as industrial engineering manager of The Fafnir Bearing Company, New Britain, has been announced.

He will have charge of plant layout, materials handling systems and equipment, coordination of communications equipment, rate setting and factory wage administration.

Mr. Sherer joined Fafnir in 1956 and was named industrial engineering supervisor a year ago.

♦ **THE FENN MANUFACTURING** Company, Newington, leading producer of precision metal forming equipment, has announced a new application of their Hydroformers in the precision attaching of ball fittings to parking brake cables for automobiles. Two of these machines are already in

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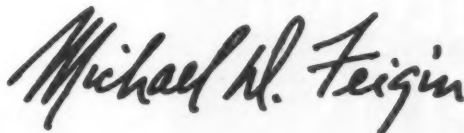
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operation with highly satisfactory results.

The Fenn Hydroformer is actually a modification of the Rotary Swaging Machine. The modification incorporates the use of a spindle mechanism which allows wide opening of the dies to permit swaging between shoulders, sometimes referred to as internal, or central reduction. The spindle mechanism carries a pair of hydraulically actuated wedges which impart a controlled closing action to the dies. The wedges, in the fully advanced position, fill the spaces between the hammers and the dies. In the retracted position, they permit the dies to open wide enough for the insertion of a ball, or other shape, for swaging. Hydraulic pressures for the wedge operation is developed by a motor-driven pump controlled by a foot-operated push-button.

♦ MARSHALL RAWLE, chairman of the board of the Hartford Steel Ball Company, Inc., West Hartford, manufacturers of precision balls and custom bearings, has announced the election of Emmett N. Shutts as executive vice president. Mr. Shutts succeeds the late Stephen V. Zavoico as operating head of the company.

Mr. Shutts joined Hartford Steel Ball in 1950 as New England sales representative. In 1956 he was appointed assistant general sales manager. Early this year he was elected a vice president.

♦ CANADIAN and American guests honored Pitney-Bowes of Canada, Ltd. in Toronto recently at the opening of the company's new plant and head office there.

The company is a subsidiary of Pitney-Bowes, Inc., Stamford, manufacturer of postage meters and business machines and the originator of the metered mail system.

With Canadian officials, civic and business leaders and families of the company's employees taking part, a

day-long open house program marked the 35th anniversary of metered mail in the Canadian postal service.

The building combines PB of Canada's national headquarters and Toronto sales-service operations in 56,000 square feet, 26,000 more than they previously occupied in two locations, and provides manufacturing facilities.

The head office administers sales and service operations for 22 Canadian branch, district and sub offices in principal cities of each province.

♦ H. BURLING NARAMORE, president and director of Bridgeport Fabrics, Inc., Bridgeport, has been elected to the New England Advisory board of Federal Mutual Insurance Company, it has been announced by James S. Kemper, chairman.

Mr. Naramore is also president and director of Bridgeport Fastener Tapes, Inc.; chairman of the board of Donahue Corporation of Canada Limited; and director of the Connecticut National Bank and The Red Star Company.

♦ ROGERS CORPORATION, Rogers, has named Space Engineering, Pasadena, California, to handle its high temperature products, such as printed circuits, reinforced Teflon and molded, high temperature rubbers, in California and Arizona.

Space Engineering will sell these materials primarily for use in aircraft and missiles. Rogers produces non-metallic specialty materials for application in aviation, missiles and rockets, electrical, electronic, automotive and shoe industries.

♦ FIFTEEN more employees of Chandler-Evans, West Hartford, earned new cash awards, it has been announced, as the company's suggestion box award system, established less than two years ago, topped the 450 mark.

Highest award in the most recent judging, which takes place approximately every two months, went to John

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McGrath, Bloomfield, who received \$50 for his suggestion that wornout chuck jaws be salvaged by welding an insert into the old jaws rather than replacing them with a complete new set.

♦ **SIKORSKY AIRCRAFT** recently completed construction of its 100th S-56 helicopter. The twin engine giant, the free world's largest production helicopter, was rolled from the Sikorsky flight hanger in Stratford for delivery to the U. S. Marine Corps for use in troop and cargo transportation.

The S-56, which is also being built as a troop and cargo carrier for the U. S. Army, went into production in 1955. It was the world's first production twin-engine helicopter.

♦ **SMALL MANUFACTURERS** in the New Haven area were warned recently that in order to successfully compete for subcontract work on government orders they must match their facilities against the item to be manufactured.

Manufacturers who employ less than 50 met in the auditorium of the New Haven Chamber of Commerce for a session arranged by the Manufacturers' Division to consider the matter of increased subcontract work for their firms.

Addressing the group were repre-



Pictured sitting, left to right, Paul Ambruoso of the American Hydraulic Company and the A. & L. Jack Company; Merritt D. Bradt, chief, Production Section, Small Business Administration, Regional Office, New York; and Edward Fitzgerald, chief, Small Business Division, Boston Air Procurement District. Standing, Mrs. Eric T. Ball, Machine Products Company and Richard J. Falvey, manager, Manufacturer's Division of the New Haven Chamber.

sentatives of the Small Business Administration, the Boston Air Force Procurement District and the Navy Ordnance in Bridgeport. Discussion centered on improved contacts with procurement officials, prime contractors and government agencies.

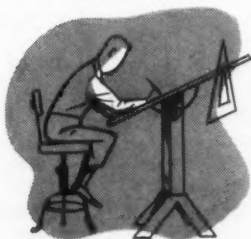
The Manufacturers were told that registering with one purchasing center

does not mean that the firm is registered with all others in that service. The Directory of Purchased Items and Purchasing Locations of the Department of Defense, published by the Small Business Administration was described as the best way to register facilities adequately.

Small manufacturers were also told

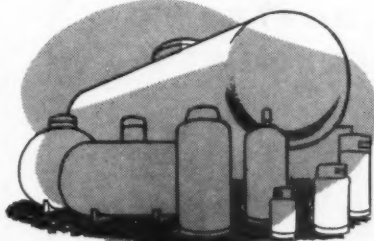
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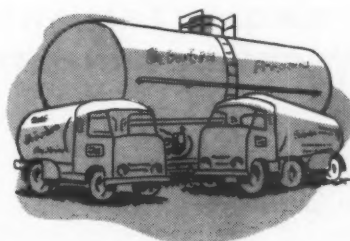
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that they should not overlook the fact that many standard items ordinarily made for the consumer market are also purchased in great quantity for the military and are bought through the General Services Administration.

The session was the first of a series planned by the Chamber's Manufacturers' Division to widen its contact with smaller member firms. At future sessions subjects for discussion will include cost factors in business operation, plant layout, handling of materials, and accident prevention.

♦ A NEW CATALOG with complete information particularly helpful to the purchasing agent and design engineer on the design and manufacture of component metal parts is now offered by Stanley-Humason, Inc., of Forestville, a subsidiary of The Stanley Works of New Britain.

Producing a diversified product line since the 1800's, the company specializes in designing and manufacturing springs, wire forms, light metal stampings, screw machine products, assemblies and sub-assemblies. No standard catalogued items are made.

♦ KEYBOARDS for the new "Sonora" electronic organ will be produced by Pratt, Read & Co. of Ivoryton, the largest and oldest piano and organ supply company in the world.

Pratt, Read announced it has received a substantial order from Sonora Electronics, Inc. of Chicago, for keyboards to be used in the new organ. The Sonora firm expects to follow its favorable organ introduction at the recent Music Merchants trade show, with immediate volume shipments.

♦ THE INTRODUCTION of Vibro-Block Adjustable Vibrating Feeders has just been announced by the Arthur G. Russell Co., Forestville.

The feeders will orient and deliver standard parts, plus an endless variety of parts previously impossible to handle, at speeds up to 80 ft. per minute. This is accomplished, according to the company, because each feeder is energized by three (or more, depending on size) special magnetic motors called VibroBlocks. The mounting angle of the VibroBlocks may be easily adjusted so that the horizontal and vertical components of vibration may be varied to best suit the particular part being fed.

♦ KAMAN AIRCRAFT CORPORATION, has announced the flight of an electrically powered version of a radio-controlled, pilotless helicopter. The piston engine in the helicopter has been replaced with a lightweight high-voltage AC electric motor, which gets

its power through a cable from a 250 KW gas turbine driven generator on the ground. Kaman developed the aircraft under contract with the Navy Bureau of Aeronautics as a potential long-duration platform and is now conducting initial evaluation tests, with a safety pilot aboard, at their Bloomfield facilities.

Among the advantages of such an aircraft is the fact that it would be possible to keep it in the air over one location for long periods of time. The system is designed to operate completely automatically and maintain a station at given altitudes above the base equipment.

♦ **H. V. CLARK**, executive vice president, Detroit Steel Corporation, has announced the following personnel changes at the company's Detroit and Eastern Cold Strip Mills.

J. C. Donnelly, general superintendent, Eastern Mill, Hamden, is retiring under the company's retirement program after 24 years of service.

R. A. Schrage, general superintendent, Detroit Mill since 1957, and who joined the company as helper in the shipping department in 1945, has been transferred to the Eastern Mill as general manager.

Other changes at the Eastern Mill are the promotions of **S. Filimon** and **E. Burt** to general superintendent and assistant general superintendent, respectively.

♦ **A FOUR-PAGE**, illustrated booklet describing a method of installing communications and power wiring, each in its own surface raceway channel, is available without cost from the Wiremold Company, Hartford.

Called the Tele-Power Duct System, the assembly consists of a pair of parallel Wiremold raceways, one for telephone, signal and interoffice communications wiring, the other a multi-outlet system for power and light service. The system is installed on the surface of the wall, making the wiring easily accessible.

According to the booklet, advantages of the two-duct system include separate covers to isolate high and low potential wiring, raceways which accommodate terminal blocks, standard installation techniques, use of standard fittings, no drill holes are needed in the cover, easily-mounted receptacles, the snugly-fitted raceways, and provision for extra capacity.

♦ **JOHN H. CHAPLIN**, chairman of the board of Veeder-Root, Inc., Hartford, and long prominent in state manufacturing circles, died recently in Liverpool, Nova Scotia.

A graduate of Yale Sheffield Scien-

tific School, Mr. Chaplin joined the Root Company in Bristol two years later. After a leave of absence to serve in the Army during World War I, he returned to the company and was advanced to superintendent in 1919, and vice president five years later.

When the Veeder Company and the Root Company merged 30 years ago, he was made secretary and sales manager of Veeder-Root, Inc. In 1933 he became a director of the corporation, a vice president in 1935, and executive vice president in 1941. In

1949 he was named president, and was elected to chairman of the board in 1954.

At various times he was a director of Colt's Patent Firearm Manufacturing Co.; Bristol Brass Corp.; Holo-Krome Screw Corp. and the Phoenix State Bank and Trust Co. He was also a president of the Manufacturers Association of Hartford County and was a director of the National Association of Manufacturers.

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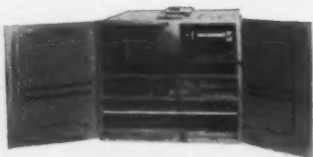
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Switch, Type ES-141, has been announced by The Newton Company, Manchester. The new switch accepts four independent signals and sequentially connects them to a single output in a four-way display on one oscilloscope. The unit consists of free running oscillator, electronic counter, diode gating matrix and level mixing cathode followers. Self-contained, the regulated power supply requires only 115 volts, 60 cycle, at 1 ampere or less.

Applications for the ES-141 are said to include: Comparing various outputs of analog computers, relay contact timing comparisons; in telemetry systems; data gathering systems; servo-amplifier studies; pulse coincidence; saw tooth measurements; amplifier gain calibration; distortion studies; quality control tests; chopper timing; multi-reference delay line studies; electronic production line test equipment; and multi-channel magnetic tape monitoring.

♦ JOSEPH T. WHALEN, founder and chairman of the board of the Accurate Insulated Wire Corp., New Haven, died recently at his home after a long illness.

A native of New Britain, Mr. Whalen spent his early years in Meriden and attended Meriden schools. Excellent in sports, he played the quarterback position on the Meriden High School football squad. He was graduated from Holy Cross College in 1912 and went to New Haven where he continued his athletic career playing with the Washington Glees.

Besides his wife, Mr. Whalen is survived by four daughters, three sons, one sister and 19 grandchildren.

♦ CHANGES in the engineering organization of the Wallace Barnes

Division of Associated Spring Corporation, Bristol have been announced by G. T. Zahnke, general manager of the division.

John B. Beckwith has been appointed to the new post of engineering manager and David E. Waite, chief product engineer, has been assigned to the factory manager's staff to work on special assignments. Mr. Beckwith is a graduate of the Bristol schools and Amherst College.

He joined the Wallace Barnes Division in 1946 and the following year was appointed chief design engineer. He was awarded an A. P. Sloan Fellowship, and studied for a year at the School of Industrial Management at Massachusetts Institute of Technology where he was graduated in June 1958 with a masters degree in industrial management. Upon his return to the Wallace Barnes Division he was named assistant chief product engineer.

Mr. Waite is a graduate of Massachusetts Institute of Technology with a degree in mechanical engineering. He has been with the Wallace Barnes Division since 1927 in various positions, including assistant metallurgical and research director, superintendent of the spiral department, and most recently as chief product engineer since 1951.

♦ PETER H. MORGANSON has been appointed assistant chief engineer of Veeder-Root, Inc., Hartford, manufacturers of computers and counting instruments.

Mr. Morganson has been associated with General-Gilbert Corporation and the William L. Gilbert Clock Corporation, Winsted, for the past eight years. While with Gilbert, he held the positions of works manager, director of research, and chief engineer.

He was also with Radio Corporation

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of America in Lancaster, Pa., as a project engineer, and was an instructor in analytical geometry at Stevens Institute. He holds twelve patents for various mechanical and electrical mechanisms and devices.

♦ **AN ANALYSIS** OF the advantages of a location in Connecticut for manufacturers of materials handling equipment was issued recently by the Connecticut Development Commission.

The study is in line with the commission's policy of seeking new industries for Connecticut on a "selective basis." "We are concentrating our promotion efforts," a spokesman for the commission explained, "on industries which would find Connecticut distinctly advantageous."

To secure impartial basic material, the assignment of analyzing the state's basic industrial potential was given to Cresap, McCormack and Paget, a New York firm of management consultants. The firm was also asked to report on the varying requirements of the 460 industry types recognized by the U. S. Census of Manufacturers.

♦ **PLANS** for the organization of a Small Business Investment Company for the Waterbury area have been announced by the board of directors of Waterbury National Bank. According to Harlan H. Griswold, president of the bank, the creation of this company as authorized by the last session of Congress will make it possible for small and medium sized businesses to acquire equity capital for both short and long-term purposes.

Under the terms of the act, the bank may both sponsor the company and also invest in the original capitalization. The investment companies will be under the supervision of the Small Business Administration and it is expected that the full procedure and regulations will be available this month with the companies ready to go into operation early in 1959.

♦ **FORMATION** of the Connecticut Instrument Corporation, Wilson, has been announced by its co-founders, Charles W. Warren and Paul A. Wilks, Jr. The new corporation will develop and manufacture research and control instruments and provide a service in ultrasonic impact grinding, a new machining technique for such hard and brittle materials as glass, ceramics, tungsten carbide and the like.

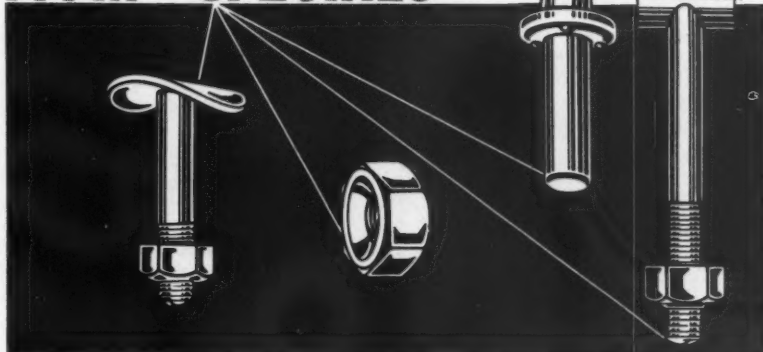
President of Connecticut Instrument Corporation is C. W. Warren, an electrical engineering graduate of Ohio State University and a resident of Weston. Mr. Warren was formerly president of Warren Electronics Corporation, Bound Brook, New Jersey. After selling this company to the

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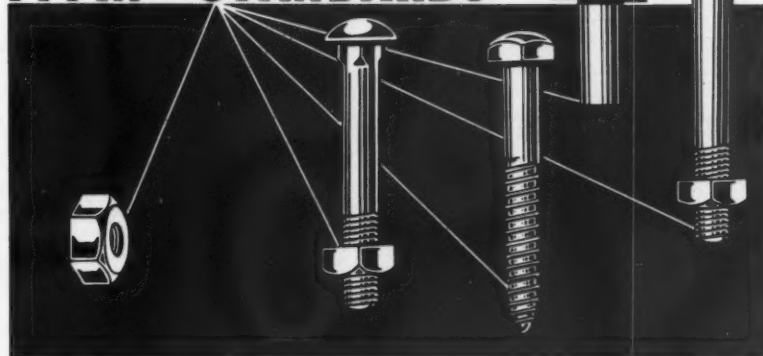
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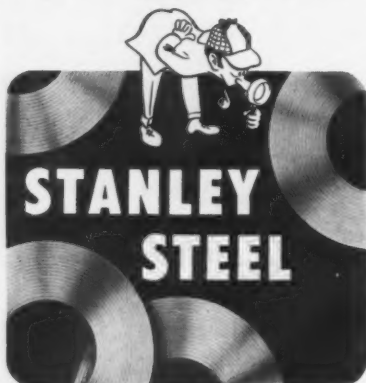
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Perkin-Elmer Corporation, Mr. Warren joined Perkin-Elmer's staff and assisted in integrating the company's ultraviolet instruments into Perkin-Elmer's product line.

Paul A. Wilks, Jr., vice president, is an engineering graduate of Harvard University and was associated for fourteen years with Perkin-Elmer, where his last position was director of marketing.

♦ **WILLIAM H. GATENBY**, formerly of the Ford Motor Company, has joined Harvey Hubbell, Inc., Bridgeport, as assistant to the general manager, according to an announcement by George R. Weppeler, vice president and general manager of the Bridgeport wiring device firm.

Mr. Gatenby had been with the Lincoln-Mercury Division of Ford Motor Company since 1953, serving most recently as administrative assistant to the general manager. He is a graduate of Washington University and received an M.B.A. degree from Harvard University.

♦ **HAYDON DIVISION** of General Time Corporation, Torrington, has announced the availability of a new low-cost commercial Elapsed Time Indicator known as the Series ED-71. The new unit is expected to find wide application on machine tools, instruments and other industrial equipment, on commercial communications equipment and on practically any type of installation where an accurate record of operating time will reduce costs, keep equipment at peak operating efficiency by having maintenance, parts or tool replacement on a systematic basis.

The Series ED-71 Elapsed Time Indicator is equipped with a direct reading, five-digit counter that records hours and tenths of hours up to 9999.9 and then repeats. An indicator on the dial is provided to give visual assurance that the instrument is operating.

♦ **AT A MEETING** of the board of directors of Bauer & Company, Hartford, manufacturer of marine heating and refrigeration equipment, William D. Kirby was elected to the newly-formed office of executive vice president. In his new post Mr. Kirby is responsible for manufacturing and electrical contracting operations.

Before joining the commercial sales department of Bauer in 1948, Mr. Kirby was associated with Chance-Vought from 1927 to 1938, and with Liberty Aircraft of Long Island from 1938 to 1947.

John T. Dolan, vice president in charge of Electrical Contracting Division, is now also director of engineer-



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ing for all Bauer divisions. Mr. Dolan is a graduate of Brown University, Providence, R.I., and is a Registered Professional Engineer in the state of Connecticut.

The company has also announced the promotion of Robert E. Linton to chief engineer of the Manufacturing Division. Mr. Linton will direct the research and design activities of the recently-formed Engineering Department. He is a graduate of Rensselaer Polytechnic Institute. He joined Bauer in 1956.

♦ **FABRICATION** of a rotating missile tracking scanner under contract from the Lincoln Laboratory, Massachusetts Institute of Technology, has been reported by Lycoming Division, Avco Manufacturing Corporation, Stratford.

The scanner is part of MIT's experimental high-power radar installation at Millstone Hill in Westford, Mass. The large assembly is 42 inches diameter by 72 inches long and contains an eccentric rotary horn.

The eccentric horn is a large copper plated sheet steel weldment comprised of an offset circular tube with flared horn enveloped by an outer cylindrical and conical shaped air foil shell.

♦ **SAUL M. SILVERSTEIN**, president of Rogers Corporation, Rogers, has been elected a director of Orchard Paper Co., St. Louis, Missouri. Orchard is a manufacturer of a wide variety of paper products with plants in St. Louis, Los Angeles, Calif., and Potsdam, New York.

Mr. Silverstein has been president of Rogers since 1946. The firm manufactures a diversified line of non-metallic specialty materials with application in the automotive, electronics, electrical aircraft, missiles and rockets, and shoe industries.

♦ **NEW ACCESSORIES** have been added to the LAB-VAC thermoplastic sheet forming machine produced by Auto-Vac Company, Bridgeport, making it even more versatile than before, according to the manufacturer. In addition to straight vacuum forming on female molds, or drape forming on combination male and female molds, the LAB-VAC may now be used for plug forming.

For applications where deep-draw forming with minimum side wall taper is required, a plug forming attachment is available. Speed and depth control of plug stroke and manual air-cushioning controls are incorporated for maximum operating efficiency.

♦ **ENTH-ACID 82**, a new and improved dry, powdered replacement for liquid acids has been introduced by

Enthone, Inc. of New Haven, a subsidiary of American Smelting and Refining Company. The new product is a blend of acid salts, activators and surfactants which is effective for activating iron, steel, brass, copper or zinc base die castings prior to plating. It is also said to be an effective pickling agent for removing rust, heat treating and welding scale from steel.

In contrast with liquid acids, there are no hazardous, concentrated acids to be handled, no carboys to be broken or returned for credit. In addition, Enthone claims that the activators in

Enth-Acid 82 will produce brighter, cleaner surfaces prior to plating resulting in better adhesion and faster, more uniform bright plating.

♦ **THE BRISTOL COMPANY** has announced a new traveling tunnel kiln pyrometer especially designed to record temperatures to which work passing through a kiln is subjected during the entire run. This continuous record now makes possible accurate adjustments to kiln controls based on actual working temperatures.

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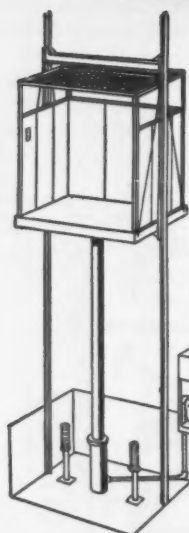
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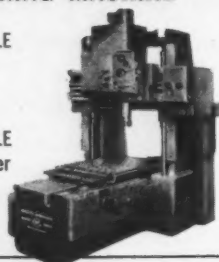
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length are mounted on a test car in the required locations. The thermocouples are connected to a Bristol Dynamaster Potentiometer by a long armored extension cable containing a pair of extension wires for each thermocouple. The cable is fed from the recorder into the kiln and is drawn through the kiln with the test car.

◆ CHECKING the clearances between the ID and OD of mating parts to millionths is now possible with the Air-O-Limit 3-station ID-OD Clearance Comparator introduced by Pratt & Whitney Company, Inc., West Hartford.

The new comparator is designed for checking precision mechanisms, such as servo valves, where clearances are kept to a few millionths of an inch. It is a combination of two standard gaging units plus a computing circuit.

In operation, the output of the ID and OD units is fed into a multi-function computing relay, and the clearance or interference between the two parts is read on the clearance indicator in the center of the gage. The action of the indicators is fast, and the dials are large, so that readings can be obtained quickly and clearly.

◆ SIGNIFICANT ADVANCES in copper and brass production technique have been announced by The American Brass Company, Waterbury, who has put into operation the industry's first casting equipment for both extrusion billets and rolling mill slags based entirely on the semi-continuous casting process.

This pioneering installation at the Ansonia Division is said to be producing metal of a quality greatly superior to that obtained previously by the conventional method of casting in individual molds.

The new casting installation comprises a series of casting machines each fed with liquid metal from Ajax electric induction furnaces. The liquid metal flows from the furnace spout along a launder to a distributor which insures a smooth, splash-free entry of metal into the molds. The metal is cooled rapidly in passing through the water-jacketed "bottomless" molds and is solid by the time it leaves them. The molds are continuously filled with molten metal to match the withdrawal of the solidified castings until the ingots have been cast to their desired length.

President Harrison Fuller Dies

(Continued from page 25)

management should join him in this effort was reflected in the expansion of the Association's Speakers Bureau to some eighty persons, or a growth of over 100% in the year and one half of his active leadership. The visible

record of his outstanding leadership of the Association is recorded in Part I of "The President's Annual Report" in this issue of Connecticut Industry and in the November 1957 issue.

Mr. Fuller was a native of Minneapolis, Minnesota, where he was born February 9, 1892. He received his early education in the St. Paul public schools and graduated from the University of Minnesota. During World War I he served as a major in the field artillery.

He was an incorporator of the American Legion under an act of Congress and served as the Legion's first commander, Department of Minnesota. During his early career he specialized in business reporting for the St. Paul Despatch and Pioneer Press and at one time was city editor, and later assistant managing editor of the newspaper. Following his newspaper career in St. Paul he did publicity and legislative work in Washington, D. C. on behalf of wheat growers and the milling industry of the Northwest. Later he became editor and publisher of the Fort Myers Tropical News, Fort Myers, Florida.

In 1928 he joined the investment banking firm of J & W Seligman & Co., and Tri-Continental Corporation as Vice President.

In 1939 he organized the Fuller Merriam Company to manufacture vitrified grinding wheels by a new process invented by Dr. E. S. Merriam of Marietta, Ohio. The company, located in West Haven, has grown from one employing six persons to a staff of nearly fifty. In 1948 and 1949 he served as president of the New Haven County Manufacturers Association and in 1950 became vice president of the New Haven Chamber of Commerce. He was also a director of the Grinding Wheel Manufacturers Association and a member of the Congressional Action Committee of the New Haven Chamber of Commerce.

Prior to his election to the presidency of the Manufacturers Association of Connecticut in December 1956 for his first one-year term beginning January 1, 1957, Mr. Fuller had served on the Association's Board of Directors for seven years including the four years as its vice president. Re-elected for his second term as president in December 1957, he had served nearly nine months at the time of his death.

He was a member of the Graduates Club, and The Lawn Club of New Haven, The Anglers Club of New York, Oquossoc Angling Association, Oquossoc, Maine, the Chi Psi Fraternity and the Trinity Church On The Green, New Haven.

Surviving Mr. Fuller are his widow, Mrs. Julia Buckland Fuller and daughter, Miss Lucy Harrison Fuller. A

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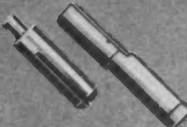


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memorial service was held at Trinity Church On The Green at 2:00 P.M., Thursday, September 25 with The Reverend C. Lawson Willard, Jr. officiating. Messrs. Carlyle F. Barnes, vice president, S. W. Farnsworth, director, Norris W. Ford, executive vice president, John Coolidge, treasurer and Leslie M. Bingham, secretary represented the Association at the services, with the latter three acting as ushers. Besides relatives and close friends of the family a large delegation of New Haven manufacturers and key employees of the Fuller Merriam Co. of West Haven attended the services. Private burial service was held at the Grove Street cemetery, New Haven.

The Road To Freedom For Americans

(Continued from page 31)

inexpensively as water from a faucet in order to provide an abundance of cheap power for poor people, so they can use it.

"None of you favor public power for the banker, or for the millionaire, or for the man who is owner of a gigantic enterprise. If you have public power, you have to have it for the poor people so they can use it abundantly. It should be obvious, therefore, that if the poor people of the country are going to be able to use this postage stamp power abundantly they need the apparatus to use it. And so, quite obviously, once we take over public power, were going to take over General Electric and start manufacturing refrigerators and hair dryers and vacuum cleaners and all the things that people must have to use power cheaply. You can't expect to let General Electric keep a high price for all this fancy electrical equipment and make it so expensive that poor people can't buy it, so they can't use the power. So I'm with you in your fight to socialize General Electric, although I regret that thereafter you can't strike any more for higher wages. You're going to have to work at the salaries of the rural mail carriers. You'll have to disband your Unions. You're just going to be Government employees."

Awful silence fell over the audience. Some guy said, "Say that again." "Well," I said, "it is just as simple as the night follows the day. Nobody would argue sensibly for public power at give-a-way rates to people who have no equipment to which to tie it, so you've got to bring down the prices of all these things that are made by General Electric and Westinghouse. Maybe your wages have to come down a little bit, but we are going to give the cheap power to the poor people in

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great abundance." I went through it again. A committee called on me that night before I left Cincinnati and said: "By the way, Senator, we're not for round one any more either." I think we have failed to explain it sometimes.

Let me say this in conclusion. We need, in my opinion, imperatively a fourth force to offset the third force that I have described that preys upon the weaknesses of the Electoral College system and the division by the Mason-Dixon Line of the two other forces—Republicans and Democrats—to enable the third force to push the rest of us around. And so I was pleased a month ago when many in jobs like yours started an organization which today may bloom to become a fourth force. I suspect you read about it, as I did, in the David Lawrence column, or in the pages of your favorite newspaper. The news story told about a group of distinguished Americans who had launched an organization called "Americans for Constitutional action"—an ACA to gather men across party lines to fight the ADA. I began to see new hope, because these men are men who have courage and capacity. Headed by Admiral Ben Morrell of the Jones & Laughlin Steel Company of Pittsburgh, and Secretary of the Treasury Charles Edison—a former Governor of New Jersey and former Secretary of the Navy—a great and good Democrat with his offices in New York City. Among the trustees are Dr. Walter Martin whom you doctors will recognize as a former President of the American Medical Association; T. Jefferson Coolidge of Boston, a distant kinfolk of our friend, John; an industrialist, Henning Prentiss of Armstrong Cork; Ed Jaffis, former Congressman of Dallas, Texas, and Counsel for the Southwestern Bell Telephone Company.

You never get in this business a decision between all good and all bad. You don't get many choices between exactly what you would like to have and everything you do not want, but in every single primary in the party of which you are a member, there is a

difference between candidates. If you vote for the fellow who is a little bit more conservative, a little bit more dedicated to private enterprise, a little bit more dedicated to constitutional Americanism than the other fellow, you've helped your party move forward. And, if in the fall, you select the fellow, be he Republican or Democrat, who's just a little bit closer to your point of view than the other fellow, I'd encourage him and support him without regard to politics. By so doing you've helped him to succeed, and by magnifying that difference and supporting it, the differences grow. In succeeding elections people more wholeheartedly dedicated to your point of view, who decide to run, have an opportunity to win. By bringing together without regard to archaic partisan distinction, men and women of good will, willing and ready to support an idea, we can do something worthwhile for the side of freedom. If we let the other side go they will push this country down the drain of Socialism, of deficit spending, of wildcat inflation and of a constantly decreasing horizon of individual liberties and human freedom.

Having studied, having participated in these campaigns all over the country, and having associated with Republicans and Democrats in every area, I don't know how you meet a well organized challenge, geared to the deficiencies of our Electoral system, except by out-thinking them and out-smarting them and out-working them, and out-organizing them. Otherwise, it seems to me, by the slow processes of attrition we are losing something pretty precious in America.

Now if I am wrong, at worst you spent an uncomfortable hour after a delightful meal. If I am right, this is true—only men like you in jobs like yours, in States like this, can find the answer. Only some such organization as Ben Morrell and Charley Edison's Americans for Constitutional Action can produce the fighting force in time to win.

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How Would You Decide?

By **Fredrick H. Waterhouse**
Counsel

In a claim for sick pay under a contract must the employee testify or produce some evidence that he was actually sick?

Here's What Happened!

The contract provided for sick pay to employees after a specified period of employment and the employees involved had all been employed long enough to qualify. The contract also provided that any employee receiving sick leave benefits for more than one day could be required to furnish the company with a medical certificate.

On a particular Monday, following the inauguration of a reduced work schedule, four employees in a certain department reported to their foreman they were sick and were given permission to go home. That same day two other employees called in stating they were sick and would not be at work. These latter two were granted sick pay but the company was convinced that the four who went home were not actually sick, and refused to grant them sick pay. The following Friday eighteen other employees in that department called in, or had someone in their family call in for them, and advised the company they were sick and would not be in. One other employee called in claiming to be sick, but when the company disclosed to the union that he actually went to New York on family business that day, his claim was dropped. The company refused sick pay to the four who were out on Monday and the eighteen who were out on Friday and the union took the case to arbitration. At the arbitration hearing none of the grievants testified and, except for the introduction of the contract as an exhibit, the only testimony was by a foreman who is a member of the bargaining unit, and concerned only one employee. No evidence of any kind was introduced regarding the twenty-one others. The union representative made a lengthy speech outlining the claims but did not testify. The company then stated its position that it was not convinced the employees were actually sick and claimed the board must have some evidence presented to substantiate the claims of the employees. The union

contended no evidence was necessary and, therefore, did not present any.

Is evidence necessary to uphold a claim for sick pay before an arbitration board?

The board commented that it was "reluctant to place undue emphasis on such strictures as apply in a court of law." It observed that it is quite common for parties to an arbitration to set forth in statement form the basic information relating to the dispute without presenting any evidence under oath and for the arbitrator to make his award in the light of such information no matter how informally presented. The board also stated that the company quite understandably questioned the legitimacy of the claims of illness and that it would have been entirely reasonable for the company to require the individuals involved to furnish proof that they were actually sick in order to be paid sick leave but that such evidence is no longer necessary when the matter has reached the arbitration board. Consequently, since the company did not produce evidence that the employees were not sick but left it to the employees to prove they were sick, the board must grant sick pay as claimed, regardless of the absence of any evidence either way.

In the absence of a provision in the contract limiting the company's right to suspend, is the suspension of an employee arbitrable?

Here's What Happened!

The contract between the company and the union contained a "Management Rights" clause reserving to the company the usual rights of operating the plant and directing the working force, including the "exclusive" right to hire, transfer, promote, demote, suspend, and to discharge for cause. Two workers were suspended for a week under a company rule providing for suspension for restricting, reducing or slowing down production or output. The union protested that the employees had been discriminated against. Altho the union stated it was claiming discrimination under the clause in the contract prohibiting discrimination because of union activity and one of the

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suspended employees was a union steward, it also could not understand why these employees were suspended for suddenly becoming slow workers. The Company claimed there was absolutely no evidence of discrimination because of union activity and the question of suspension for any other reason is not arbitrable. The company did, nevertheless, introduce substantial evidence demonstrating the suspended employees took much longer to do a certain job than less experienced employees took on the same work.

Does the management's rights clause give authority to suspend as a disciplinary measure at the company's sole discretion?

The arbitrator ruled that since the management function of suspension is not specifically limited or affected by the provisions of the agreement, and the arbitrator is prohibited by the contract from changing any of its terms, the question of suspension is not subject to arbitration. He mentioned that there was no evidence presented at the

hearing on the charge of discrimination for union activity so that question was never seriously advanced or considered.

What is the effective date of piece work standards set by an arbitrator when neither the arbitrator's award nor the contract mention an effective date?

Here's What Happened!

The company and the union agreed to continue to negotiate on the establishment of a wage incentive program. They also agreed that the rates should first be set by the company and then could be questioned or objected to by the employees or the union if they were not satisfactory. Furthermore, if no agreement could then be reached as to the proper rate, the question could be taken to arbitration. Under this procedure a rate was taken to arbitration and the arbitrator ruled that the rate set by the company was not equitable. He then designated a time study expert to make an independent time study and report to him. When this was done, and on the basis of the expert's recommendation, the arbitrator set new standards but also directed the company and the union to restudy the standards and then to reset the standards either higher or lower than the ones he had set, as might be indicated by the results of such study. The company adopted the standards set by the arbitrator and thereafter computed earnings based on those standards. The union claimed the standards set by the arbitrator should apply retroactively and earnings should be rechecked in accordance with the new standards. The company claimed that since even the standard set by the arbitrator was not to be the absolute one, but was subject to revision after study as directed by the arbitrator, and since the arbitrator did not specifically state the standard set by him was to be applied retroactively, and there was no provision in the contract requiring the revised standards to be applied retroactively, the only obligation of the company was to revise the standards as of the date of the arbitrator's award.

Should piece work standards set by an arbitrator be retroactive?

The arbitrator ruled that once a standard is challenged, and an arbitrator later upholds that challenge, the standard must be presumed to have been inequitable from the date of the grievance and, therefore, the date of the grievance must become the effective date for the institution of the new standards unless the arbitrator specifically rules otherwise.



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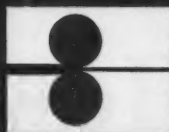
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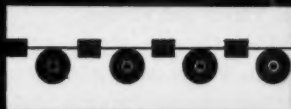
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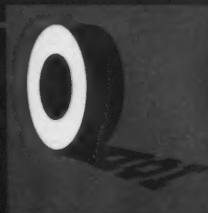


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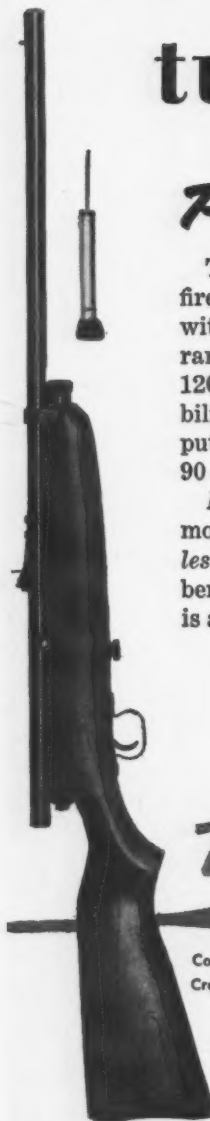
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Transportation

By John B. Hedges

Traffic and Export Manager

The Transportation Act Of 1958

◆ LIKE most federal regulatory legislation, the Interstate Commerce Act has been amended from time to time over the years in an effort to make its provisions more consistent with the needs of both the regulated industry and the public interest. The latest amendments were embodied in the Transportation Act of 1958, known generally as the Smathers-Harris Bill and signed into law on August 12, 1958 by the President.

Earlier amendments to the Interstate Commerce Act, notably the Hepburn Act of 1906, the Pomerene Bill of Lading Act of 1916, the Motor Carrier Act of 1935 and the Transportation Act of 1940 were all designed to extend the regulatory powers of the Interstate Commerce Commission in the public interest. However, in the Transportation Act of 1940, we had for the first time the statement of a national transportation policy which presumed that the Commission had certain duties and responsibilities to the regulated carriers as regards the protection of their inherent advantages and the regulation of competition among them. The amendments embodied in the Transportation Act of 1958 depart somewhat from the philosophy of the earlier amendments. We now have an easing of regulation, as evidenced by a new section of the Interstate Commerce Act, 13a, smoothing the path of rail carriers who wish to curtail or abandon an interstate service. This new section permits a railroad desiring to do away with, let us say, an unprofitable passenger operation (interstate, of course) to file a notice with the Interstate Commerce Commission and the governors of the states affected 30 days in advance of its proposed action. The Commission may then investigate this proposed discontinuance of service and may issue an order requiring continuance of the operation for no more than four months pending a hearing and decision. After investigation, should the ICC find continuance of the services necessary, it may order it to be continued for one year. It is true that in the past the railroads could, by working with state commissions and through the courts achieve the same objectives, but only with considerable litigation, delay and expense and without any real consistency. That

is, they found it hard to convince the courts unaccustomed to the appraisal of operating cost evidence, that the service in question did constitute an economic drain on the road.

Another slackening of the regulatory chains is seen in a new paragraph which has been added to section 15a of the Interstate Commerce Act. This new rate making rule is set forth in the following language:

"In a proceeding involving competition between carriers of different modes of transportation subject to this Act, the Commission, in determining whether a rate is lower than a reasonable minimum rate, shall consider the facts and circumstances attending the movement of the traffic by the carrier or carriers to which the rate is applicable. Rates of a carrier shall not be held up to

a particular level to protect the traffic of any other mode of transportation, giving due consideration to the objectives of the national transportation policy declared in this Act."

There is no question that this particular amendment was designed to make each type of service stand on its own inherent advantages. Railroad testimony given before both House and Senate committees while this measure was under consideration pointed out the need for this revision in the rate making rule, since there had been before the Commission a number of cases where motor and rail interests were in conflict. That is, cases in which the railroads had filed rates lower than the applicable motor rates on a given commodity between two particular points and upon protest to the Commission by the motor carrier, had been forced to bring such rates up to the motor level. There were some instances, although they are far fewer, in which the situation was reversed. Men well versed in transportation matters feel that this amendment should permit the rail carriers to compete on more favorable terms, particularly for long haul business since the measure of reasonableness will be restricted to the traffic movement in question via the mode of

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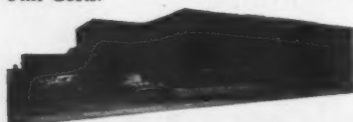
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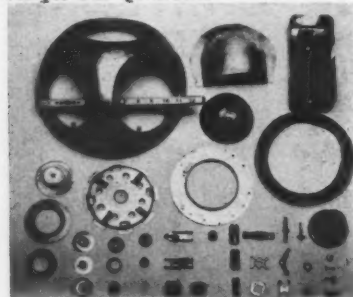
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transportation to which the rate is applicable. Transportation circles are eagerly awaiting the first Commission decisions based on this new section of the Act.

The Congress has also provided in the Transportation Act of 1958 a remedy for another railroad complaint—the slowness with which state regulatory bodies move to grant for intrastate application general rate increases which have already been approved by the Interstate Commerce Commission. Congress has now given the Interstate Commerce Commission new powers to prescribe rates for intrastate application in those cases where the low level of intrastate rates constitutes a burden on interstate commerce. Here again the rail carriers could in the past seek their remedy through the courts and with the usual delay involved. One of the more prominent of such cases was that which finally came before the Supreme Court, *CMSTP & P vs. the State of Illinois*. In that case, which had to do with intrastate commuter fares, the total earnings of the railroad were considered by the Supreme Court rather than the losses on the passenger service which was at issue. The Commission may now make its findings in such cases without considering the entire operation of the carrier or groups of carriers wholly within a state and it may also proceed without separating inter- and intrastate property holdings, revenues and expenses. This revision of the Act was regarded by some members of Congress as something of an encroachment upon the rights of individual states, but there was such widespread recognition of the burden placed upon interstate commerce by the failure of state commissions to grant increases, that it received quite general support.

Probably the outstanding compromise written into the Motor Carrier Act of 1935 was the "agricultural exemption." Although there was widespread recognition at the time of the necessity of regulating common carriage by motor vehicles, the farm bloc in Congress wanted to make sure that the farmers' right to take his goods to market in his own truck and to bring back in that same truck whatever supplies he needed on his farm would not be affected. However, the language used in Section 203 of the Interstate Commerce Act spelling out that exemption was so broadly worded that an entire class of for-hire carriers sprang up, basing their business entirely on the hauling of the commodities exempted in section 203. Interpretations of the section came before the Commission and before the courts many times since the language of the law included both "motor vehicles con-

trolled and operated by any farmer when used in the transportation of his agricultural commodities and products thereof, or in the transportation of supplies to his farm" and "motor vehicles used in carrying property consisting of ordinary livestock, fish (including shellfish), or agricultural commodities (not including manufactured products thereof), if such motor vehicles are not used in carrying any other property, or passengers, for compensation."

The problem has been to determine just what constitutes manufacturing a product from an agricultural commodity. The interpretations went so far as to exempt frozen poultry completely cut up and ready for the skillet, breaded shrimps prepared for frying, frozen fruits and vegetables and even foreign produce in which the American farmer had no interest whatsoever. The Interstate Commerce Commission compiled a list of the commodities which had been found to be exempt and when Congress decided that this section of the Act needed amendment, they wished first of all to stop any further stretching of loopholes, so they said that the exempt list would be frozen as of March 19, 1958. They then went one step further and deleted from the list and thus put back under regulation the following products: frozen fruits, frozen berries, frozen vegetables, cocoa beans, coffee beans, tea, bananas, hemp, imported wool, wool tops and noils, and wool waste. It seems quite likely that this amendment should return a considerable amount of tonnage to the regulated carriers and because of the revenue contributions this tonnage will make, should prove beneficial to shippers in general.

Another hazy point in the Motor Carrier Act of 1935 was finally cleared up by the Transportation Act of 1958. The Act had exempted private carriage, but had done so largely by not mentioning the subject other than to say that the regular standards for safety of operation, maximum hours of service of employees, and standards of equipment would include private carriers of property by motor vehicle. Since many individual firms delivered goods to their customers and made a charge for that service, court tests of their status as private carriers were inevitable. Out of these court decisions came a fairly well established rule that any private carriage even though it be for compensation is exempt from regulation so long as such transportation is in furtherance of a primary business enterprise (other than transportation) of such person. That definition in almost those same words is now spelled out carefully in the Interstate Commerce Act itself by

a new amendment to Section 203. Many users of private motor carriage were fearful that strong pressure from regulated carriers might result in a definition which would seriously hamper bona fide private carriage, but they now feel that since this definition is well grounded on the findings of the Commission and the courts in the past, it will be both acceptable and workable.

The sad economic plight of the nation's railroad system was so evident in the long hearings conducted on the Smathers-Harris Bill that in the Transportation Act of 1958 Congress has granted the Interstate Commerce Commission the power to guarantee loans for railroads. In actuality, this generous gesture is marred considerably by the attachment of conditions of qualification for loans. Railroad financial officials say that any road able to meet such qualifying conditions should have no difficulty securing funds through regular channels in the usual manner.

In general, the Transportation Act of 1958 was regarded as a relief measure for the country's railroads. It is too early to tell if the slight slackening of regulatory shackles will restore the health of the railroad industry. Many competent observers are of the opinion that the whole concept of transportation regulation needs overhauling, pointing out that the Act as originally passed in 1887 and strengthened in 1906 was designed to curb a monopoly. That monopoly, they go on to say, no longer exists. The private automobile and the airplane seem to have practically doomed rail passenger service. Motor carriers are hauling greater and greater amounts of freight each year. The railroads find themselves saddled with an operating plant far larger in many parts of the country than the available business can justify. They find themselves burdened with local taxes, archaic labor agreements as well as deteriorating properties and equipment. Obviously, it will take far more than the Transportation Act of 1958 to solve those problems.

Research in Chemistry

(Continued from page 9)

the varied municipal civic and service activities in the community.

Cyanamid's support of higher education and academic research is approximately \$1,400,000 annually. About three quarters of a million of this is for scholarships, fellowships and grants

to support faculty salaries, research projects and unrestricted grants to special groups.

The Stamford Laboratories participate in the over-all company Education Assistance program previously described as well as carrying out three separate programs devised to aid schools, teachers and students. For schools is the Education Cooperation program providing information, teaching aids, speakers, tours, counseling, seminars, exhibits and prizes in cooperation with teachers and students.

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Research as done in Stamford creates new products and processes and new uses for established products, and in so doing provides at least two additional benefits.

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As President Malcolm said during 1957, "Probably to no other industry is research as important as it is to the chemical industry. Most of our important products have been developed in Cyanamid's laboratories, and in its 50th Anniversary year the Company will spend approximately \$23,000,000 for research."

As the company begins its second half century, the emphasis on research continues to grow and as much or more money will be spent for research and development in its laboratories—much of it in Stamford, Connecticut.

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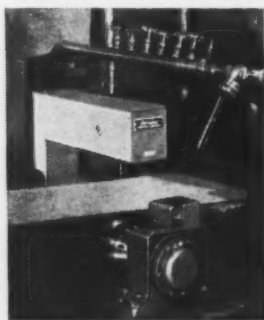
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Business Tips

Contributed by
School of Business Administration, University of Connecticut

Industry And The University—A Working Team

By GEORGE ASHERMAN
Associate Professor of Industrial Administration

♦ WHAT are the primary aims of industry and the university? Is there a mutuality of interests on the part of industry and education in fulfilling their respective missions? We can answer these questions with a few fundamental statements. Industry serves society in many ways. It provides not only the necessities of life and the substance which adds to what we call "a higher standard of living," but it also provides for the young people emerging from colleges, the opportunity to express themselves through worthwhile employment. Higher education serves society by preparing people for jobs in industry and other fields, and by preparing them to become useful citizens of the community.

There is no disagreement with the concept that the steady flow of well qualified people into industry is highly essential. Industry, in fact, cannot continue its present phenomenal growth and technical advancement, unless the flow of trained people is continued by the universities, and what is perhaps more important, unless the type and quality of training continues to improve.

How can the quality of training and the subsequent quality of the people emerging from our schools be improved? There are many phases of the educational system which play important parts and are currently undergoing change. One facet of higher education which has a direct bearing on the quality of training has not, however, been recognized. It is the need of the faculty and administration, to have more intimate contact with industry. The people who plan and conduct the training, must know by personal contact what industry is doing now and what is being planned for the future. Curricula and specific course content can then be oriented to better prepare the students for the various niches in industrial operations.

At present, the types of industry education contacts include meetings and conferences sponsored by professional societies, periodicals and other forms of literature relating to industrial operations, members of industrial

enterprises serving on educational committees and boards, individuals in industry engaging in part-time studies at local colleges, and individuals in education participating part-time in industrial activities. The type of contact which is perhaps the most effective but which has not been sufficiently exploited is the utilization of university faculty and administrators, as part-time working members or consultants in industrial organizations. The following benefits will accrue to both industry and higher education if such association is more fully developed:

1. Every industrial enterprise is periodically faced with problems, special projects, and unusual

work loads. In most instances the existing staff is more than fully occupied with routine duties. Loaded with both routine duties and the new work assignment the existing personnel can only "nibble" at each phase of the job, and hope that the results will be acceptable. We immediately see that the company may try to avoid this condition merely by hiring and training additional people each time such difficulties occur. When the work load diminishes, the newly hired personnel are released. How many of us have seen this cycle repeated time and again in our own organizations? A logical solution is to have on a standby basis, personnel who are available to reinforce the existing staff whenever it appears advisable. The "standby force" may well be specific faculty and administrators, who are available part-time either for reinforcing duties or for complete individual projects. When the same standby people are used periodically, the problem of training and familiarization in company procedure is minimized.



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2. Research work in practically any field can be a joint industry-university venture. Research may be of an emergency nature, however, most of it is conducted for long term benefits. In many areas, the university is better equipped for long range research than the industrial concern or regular consultants.
 3. Progressive companies have recognized the value of making available real case material to the university. Three major objectives are achieved. First, the company is able to get several fresh viewpoints for the solution of its problems. Second, the real cases help to condition the students to meet their future responsibilities in industry. Third, the faculty is able to gain additional background for greater effectiveness in the classroom and in industry.
 4. The faculty member will bring a fresh viewpoint and a professional approach to bear on every problem he encounters in industry. Often he has had similar experience when servicing other companies or has had full-time professional experience prior to assuming his teaching duties.
 5. The teacher broadens his experience and is thus able to bring back to his students new techniques and applications. In addition, the experience may be the basis for recommendations for revision of curricula and course content. The students will receive higher calibre instruction, thereby again preparing them more thoroughly for future jobs in industry.
 6. As an important by-product, we find that the faculty member is able to improve both his professional and financial status.
- A number of questions may be raised by those who have not utilized this type of adjunct to their operations. The time element may be a stumbling block to part-time personnel utilization. When certain projects must be completed within rigid time limits, then obviously the solution is procurement of full-time personnel or regular consulting services. If most of our projects are considered to be of an "emergency" nature, then we must re-examine our operations and pinpoint any deficiencies in planning.
- The people in industry may also question the teacher's ability to adapt himself to the "practical" aspects of

his field. As Professor Burns of Williams College analyzed the situation, "the 'practical' man will always distrust the teacher who spends so much of his time thinking rather than doing. To this practical man, the academic, the intellectual, will never lose the comic and slightly unfavorable overtones suggested by the term 'egghead.'" The basis for this concept, however, is fast disappearing. The utilization of personnel from the field of education for responsible work in industry, business, and government, is pronounced. Industry is utilizing the educator for projects in the areas of mathematics, science, engineering, business administration, industrial relations, economics, and many other fields. Some of the more progressive organizations are even utilizing teachers of subjects such as English, sociology and foreign languages for training programs in communications, special projects in industrial relations, activities involving foreign markets and operation of foreign subsidiaries.

We are aware now that industry and education contribute to each other's needs. It is essential, however, to broaden the scope of this mutual support if we are contemplating greater progress in these different, yet closely linked areas of human endeavor.

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Accounting Hints

Contributed by

The Hartford Chapter National Association of Cost Accountants

Income Projecting

By WALDRON J. FINNEGAN
Supervisor of Costs and Budgets, Ensign-Bickford Company

Historian vs. Soothsayer

At many management seminars, speakers usually produce some good-natured rib at accountants and the most humorous do this by using the word "historian" synonymously with accountant. Actually, this reference is fast becoming history itself as great strides have been made in speeding up all phases of reporting to management. These reports of what has happened represent only a part of the modern industrial accountant's responsibilities. The other part lies in that futuristic type of work that includes:

1. Preparation of annual operating and capital budgets for the succeeding year.
2. Preparation of revised standard costs and suggested selling prices for the next year's activities.
3. Cash Forecasting.
4. Projecting profits for the current and future years.

These activities come under that phase of accounting known as budgeting which, by one definition, is "accounting in advance." They demand much more than is required for historical work as preparation of the "plan" requires systematic foresight, based not only upon past experience, but, more important, upon anticipated conditions, resulting in a definite goal of meeting the profit objectives of top management.

The Projection

One of the most interesting phases of this work deals with projecting profits, for after all the main reason we are in business is to make a profit. A simple projection may be made by taking an income statement, say, for nine months of the fiscal year, and adding the remaining budget for the last quarter. This may or may not put you in the right ball park, depending upon how dynamic or stable your particular business is. However, to really hit the profit close, it is necessary to get all management people on the team; they contribute the specialists' touch for they know their own function far more intimately than the account-

ant who, in this and most instances, does not initiate the source information.

Let's run down the income statement to see who should be consulted and for what purpose: (a direct cost system) SALES. Contact the sales manager and market research manager for latest estimate of sales and possible successful bids on contracts, etc., for the remaining period.

COST OF SALES. Get the sales estimate converted to cost—Material, Labor and Overhead.

VARIANCES. See the production manager to get the latest estimate of how manufacturing variances will run for the remaining period.

PERIOD EXPENSES. Contact the manufacturing manager, manufacturing engineering manager, plant engineering manager and purchasing manager to learn latest estimate of any significant budget overexpenditure for the remaining period (especially in the areas of building and ground maintenance, light, heat, and power, staff changes, etc.).

SALES AND PROMOTION. See the sales manager to get his latest thinking on any previously unanticipated selling or promotional expenses.

CONTROL. Learn from the controller the latest estimate of over-budget expenditures in the areas of tabulating equipment rentals, office supplies, staff changes, etc. for the remaining period.

INDUSTRIAL RELATIONS. See the industrial relations manager to get the latest estimate of any budget variance for the remaining time in the areas of personnel, fringe benefits, and staff requirements.

RESEARCH. Contact the research manager to find out the latest estimate of any changes not reflected in the budget, especially in the areas of securing additional research contracts from governmental agencies, or development of new products.

GENERAL ADMINISTRATION. See a responsible officer of the company to get

(Continued on page 80)

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(LOW POWER FACTOR)

SYMPTOMS

OVERLOADED transformers, switches . . . wires heat up . . . fuses blow . . . circuit breakers open.

LOW VOLTAGE resulting in hot, sluggish motors . . . slow starting motors . . . dim lights.

DIAGNOSIS

LOW POWER FACTOR

PROGNOSIS

LOSS OF MONEY through lost production time . . . lost production capacity . . . lost production efficiency.

R_ψ

Instead of allowing your entire plant wiring system to suffer from low power factor . . . call your electric utility and ask a representative to work with you and your plant engineer. There's no obligation. Installing low-cost power factor correction equipment on your plant electrical system may cure all these troubles.

THE CONNECTICUT LIGHT & POWER COMPANY • THE HARTFORD ELECTRIC LIGHT COMPANY
THE HOUSATONIC PUBLIC SERVICE COMPANY • THE UNITED ILLUMINATING COMPANY

With Our Advertisers And Their Agencies

George Ellis Co. Occupies New Plant

♦ THE TRANSFER of operations to its newly-constructed one-story building on the Boston Post Road, West Haven, has been announced by the George Ellis Company. Steel frame with cinder blocks and brick sides, the 13,000 square foot building is of contemporary design and completely air conditioned.

The building will house the company's design, engineering and service departments and will provide warehousing space. It will also be occupied by The Connecticut Air Conditioning Company.

Both companies were founded in 1949 by the late George Ellis. The George Ellis Company, which specializes in industrial air conditioning, has installed many systems where the requirements are exacting, such as in a radiation therapy laboratory for cancer treatment; in a factory where sub-zero temperatures must be precisely maintained for the manufacture of foam rubber, and in the first New Haven department store to install air conditioning.

The Connecticut Air Conditioning Company has about sixty franchised Carrier air conditioning dealers throughout the state who specialize in smaller installations such as in homes and small buildings.

New Manufacturers' Agency Formed

♦ RONALD V. BENNETT, Orange, has formed his own manufacturers' agency and will represent industry to OEM accounts, covering principally the Eastern Atlantic states area.

Mr. Bennett will feature service to Connecticut manufacturers desiring OEM business in fabricated metals, plastics, rubber parts, etc.

Mr. Bennett was formerly general sales manager of Plume & Atwood Mfg. Co., Thomaston, and before that was product line sales manager with Olin Mathieson Chemical Corporation.

Agency Appointment

♦ UNION HARDWARE-Sealand, Inc., Torrington, has recently appointed Graceman Advertising, Inc., Hartford, to serve as its advertising agency. The agency will be responsible for advertising, sales promotion and publicity for

Union Hardware roller skates, Canadian Flyer ice skate outfits, Rain-Beau fishing rods and line, and Sealand bowling, baseball and football shoes.

♦ THE APPOINTMENT of Elston Hunt Bergen III as account executive has been announced by Kenneth C. Shenton, president, K. C. Shenton Company, Hartford advertising agency.

A graduate of Princeton University, Mr. Bergen has a background of ten years experience in advertising. For the past two years he served as account executive with Wilson, Haight, Welch and Grover, Inc., Hartford, and prior to that was advertising manager for Ozalid Division of General Aniline & Film Corporation, Johnson City, New York.

R. P. Cunningham Elected Schaller Vice President

♦ THE ELECTION of Robert P. Cunningham to the post of vice president of the William Schaller Company

has been announced by W. C. Schaller, president of the West Hartford advertising agency.

Mr. Cunningham has been engaged in industrial advertising in the Hartford area for the past fifteen years. He joined the Schaller agency as art director in 1954. A graduate of the Massachusetts School of Art, he has been a chief designer for the Hoague-Sprague Corporation, Lynn, Mass., and for Vincent Edwards Co., Boston.

Active in civic and fraternal affairs, Mr. Cunningham is a Registrar of Voters in Avon, vice chairman of the Avon Industrial Development Commission, and a member of the Fourth Degree, Knights of Columbus.

Hart Offers Catalog

♦ A NEW CATALOG SHEET, Bulletin P78, describing its Series P polarized relays for electronic and communications applications has been issued by The Hart Manufacturing Company, Hartford.

Engineered to provide extremely fast action with freedom from bounce, together with high sensitivity and excellent stability, the new relays are designed to handle 500 pulses per second, although under some conditions they will handle over 1,000 pulses per second. Copies of the bulletin are available from the company.



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**CUTS COST, SPEEDS ASSEMBLY . . .
ELIMINATES WASHERS, WRENCHES**



High-quality, low-cost nut is made of spring-tempered high carbon steel or of tempered aluminum. Has cut threads and a flange with turned-down corners which bite into material to which applied. Spring flange is deflected during tightening for vibration-proof assembly. Used by leading manufacturers. Available in sizes 6-32 through 1/4"-20. Other sizes in process.

**P-M ROLL-FREE
DRAWN STEEL STUD**

Effects unusual savings over solid studs for most roller mounting. Standard sizes in steel, stainless steel or brass or to your specifications.



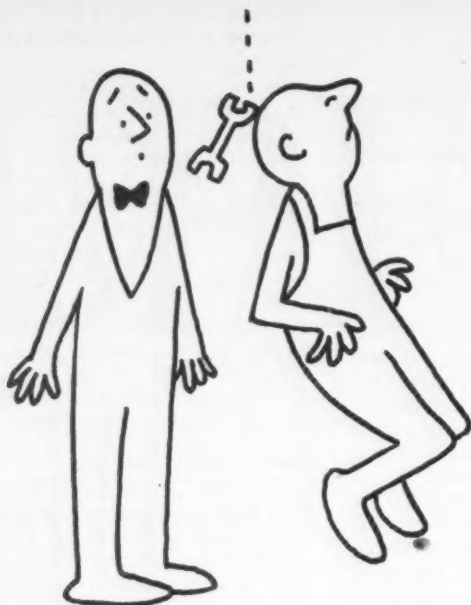
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1.

J. B. was a puzzled man—and had a right to be.
His firm had loads of workmen's comp and liability.
And yet his rate of accidents climbed up—it fairly soared—
Insurance costs went far beyond what he could well afford.



2.

So J. B. called a Travelers man, who said, "Your wisest course
Is calling up *our* firm—we stop your trouble at its source.
Our Travelers safety engineers will help eliminate
Unsafe machines and methods to improve your safety rate."



3.

"Our handy claim locations—all two-hundred-fifty-one—
Assure you speedy service: we can get there on the run."
So J. B. took The Travelers plan, his buy was most astute;
Now all his men are safer and his rates are low to boot.



4.

If you'd like *your* insurance to start working right away
Just call your friendly Travelers man—why put it off a day?
He'll build a business program that will fit you to a "T"—
He'll help you make that safer plant an actuality.

THE TRAVELERS

INSURANCE COMPANIES, HARTFORD 15, CONNECTICUT

All forms of business and personal insurance including Life • Accident • Group • Fire • Marine • Automobile • Casualty • Bonds

Business Pattern

A comprehensive summary of the ups and downs of industrial activity in Connecticut for the thirty day period ending on the 15th day of the second previous month.

Economy Continues To Improve

♦ DURING August, business in Connecticut reflected further recovery. The Index of Industrial Activity moved up for the second successive month to 7% below trend, a gain of one percentage point over July.

Increases in average hours worked in manufacturing and electric power sales accounted for the current rise.

The United States Index was at an estimated 7½% below trend in August, advancing for the fourth consecutive month. With the continuing improvement, moderate gains are now being recorded in many sectors of the National economy.

From the chart below, it may be noted that during the current recession the Connecticut index did not fall quite as sharply nor start its recovery as soon as the United States index. However, at the present time, both indexes are at approximately the same position in relation to long term trend.

Per Capita Income

In 1957 Connecticut ranked first in the Nation in per capita personal income, according to a recent report of the U.S. Department of Commerce.

The income figure of \$2,821 was 4.6% above the 1956 level and well ahead of the National average of \$2,027. Connecticut, which had placed second in recent years, moved up as Delaware, the leader last year, showed a drop of nearly 4%.

The New England States had an

average per capita income of \$2,298, more than 13% above the National figure. Both Connecticut and New England showed rates of increase that were greater than for the country as a whole.

The Conference Board, commenting on the report, points out that per capita income in Conn. has increased 48% since 1950, against a U.S. increase for the seven years of 36%.

Labor Turnover

Rates of hirings and separations held an approximate balance through August 1957. Then sharp decreases in hirings and pronounced increases in separations (mainly layoffs) produced a sizeable gap.

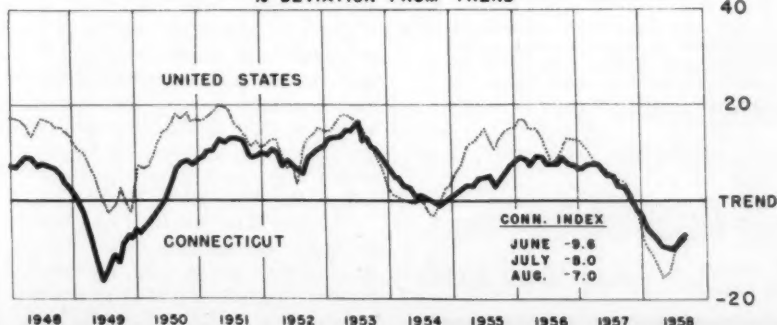
Recently, hiring rates have climbed back almost to the early 1957 level. The separations rate now has fallen well below first half 1957 figures.

With layoffs pretty well behind us and hirings on the increase, total manufacturing employment may be expected to grow in the months ahead. Moreover, the growth will be added to what now appears to be a more stable work force.

Non-Farm Employment

The one barometer which has not yet responded to the beginning recovery is total non-farm employment. The Conn. Labor Department reported a drop of 500 workers in August, leaving a total of 854,000—the lowest

INDUSTRIAL ACTIVITY—CONN. vs. UNITED STATES
% DEVIATION FROM TREND



MILFORD

**HACK and
BAND SAW BLADES**

HOLE SAWS

**GROUND
FLAT STOCK**

**ATOM-LUBE MIST
COOLING SYSTEMS**

**The New
REZISTOR
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THE HENRY G. THOMPSON & SON CO.
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**STAMPED
ASSEMBLIES**
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Send samples
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Write for
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Completely coordinated designing,
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Yes, you can trust CMT to meet all your commercial heat treating needs. That's because the CMT Team—men and modern machinery—produce dependable precision work faster at less cost.

Latest and finest furnaces and instrumentation assure accurate temperature and quality control on the widest variety of metal parts. All material rigidly inspected before shipment.

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SIMPLIFIED BONUS SYSTEMS

PERSONNEL SELECTION &
PROCUREMENT.

Reduce your recruiting expenses 50%
or more.

We maintain a constant search
for special talent and secure qual-
ified executive and technical per-
sonnel for our clients.

figure since mid-1953. All evidence indicates that this represents a floor from which we may expect to go forward.

Non-manufacturing workers in August dropped seasonally while a slight gain occurred in factory employment. The latter would have been greater had it not been for the temporary lay-offs occasioned by vacation shutdowns.

Currently, employment information indicates there will be a significant increase in manufacturing employment in September.

United States non-farm employment moved up in August to 50½ million. Non-manufacturing employment held steady with the entire gain over July occurring in manufacturing.

While most of the moderate improvement in factory employment was noted in the non-durable goods industries, there were several areas in the heavy goods field where significant increases were recorded.

Steel works, communications equipment firms, and farm machinery plants all showed sizeable increases in employment over July.

Average Weekly Hours

The Connecticut manufacturing workweek showed further gains in August, rising to 39.6 hours. This was the highest figure yet this year and marked the third successive month of improvement.

The United States factory workweek, which had dropped to a low of 38.3 hours in April, continued its improvement in August to 39.4 hours. This, however, was still well below last year's figure of 40.0 hours. The two tenths of an hour gain in August was evenly spread between the durable and non-durable segments of manufacturing.

Unemployment

Since June the state-wide total has dropped from 10% unemployed to just over 8%. A year ago 3½% of the workers in the State were without jobs.

The shrinkage in unemployment over the past two months is attributable to 3 factors: one, the improving business atmosphere; two, the seasonal pickup in farm jobs; three, the withdrawal of a large number of students from the labor force.

The reduction in the number of jobless workers in the State was not confined to just a few areas as all eighteen labor markets showed improvement. However, most of the areas with high unemployment continue to be those with a heavy predominance of metallic industries.

The Bristol labor market area, which in August led the State with 19% of its labor force out of work, showed the greatest June to August improvement—nearly five percentage points.

Interstate System now serves major New England markets!



Gives new expanded coverage through operation of Connecticut Motor Lines, Inc.

Now, Interstate System offers shippers single-line traffic movement between key eastern and mid-American industrial markets! Operation of Connecticut Motor Lines, Inc. gives Interstate System new, comprehensive New England coverage including all points in Massachusetts. It's another step in Interstate's 34 year history of providing shippers with the best transportation service and facilities available. Remember, if you ship New England — ship Interstate and be assured your freight will move swiftly, safely and economically. We also offer exceptional coast-to-coast service to or from points named in Rocky Mountain Tariffs. Our midwest carrier is Prucka Transportation, Inc. Our West Coast carrier is Garrett Freightlines, Inc.

**55 TERMINALS IN 21 STATES
COAST-TO-COAST SERVICE**



INTERSTATE SYSTEM SERVES 7027 POINTS ... nearly every crossroad on the map!

Connecticut.....	659	Missouri.....	55
Delaware.....	11	New Hampshire.....	14
District of Columbia.....	8	New Jersey.....	951
Illinois.....	279	New York.....	520
Indiana.....	306	Ohio.....	478
Iowa.....	9	Pennsylvania.....	1008
Kentucky.....	68	Rhode Island.....	226
Maryland.....	156	Vermont.....	15
Massachusetts.....	2421	Virginia.....	34
Michigan.....	491	West Virginia.....	18
Minnesota.....	39	Wisconsin.....	61

INTERSTATE MOTOR FREIGHT SYSTEM

Grand Rapids, Michigan

MORE THAN A TRUCK LINE...A TRANSPORTATION SYSTEM

IT'S MADE IN CONNECTICUT

EDITOR'S NOTE: This department, giving a partial list of peace-time products manufactured in Connecticut, seeks to facilitate contacts between prospective purchasers in domestic or foreign markets and producers. It includes only those listings purchased by Connecticut manufacturers. Interested buyers may secure further information by writing this department. Listing rates (12-time insertions only): \$6.00 for single listing. When several listings are ordered for insertion at the same time following multiple rates apply: \$10 for two and \$2.00 each beginning with the third.

(Advertisement)

Accounting Forms	
Baker-Goodyear Co The	Branford
Accounting Machines	
Underwood Corporation	Bridgeport
Adding Machines	
Underwood Corporation	Bridgeport
Adhesives	
Polymer Industries Inc	Springdale
Raybestos Division Raybestos-Manhattan Inc	Bridgeport
Advertising Mats	
Lockwood Sons Inc Wm H	Hartford
Advertising Plates	
Lockwood Sons Inc Wm H	Hartford
Advertising Specialties	
H C Cook Co The 32 Beaver St	Ansonia
Aerosol Products	
Bridgeport Brass Company	Bridgeport
Air Compressors	
Spencer Turbine Co The	Hartford
Air-Conditioning	
Dunham-Bush Inc	West Hartford
Norwalk Airconditioning Corp	South Norwalk
Air Ducts	
Wiremold Co The (Retractable)	Hartford
Air Heaters—Direct Fired	
Peabody Engineering Corporation	Stamford
Air Impellers	
The Torrington Manufacturing Co	Torrington
Aircraft	
Sikorsky Aircraft Division United Aircraft Corporation (helicopters)	Bridgeport
Aircraft Accessories	
Chandler Evans Div Pratt & Whitney Co Inc (Piston and Jet Engine Accessories—Carburetors, Fuel Controls, Afterburner Regulators, Pumps, Servomechanisms and Protek Plugs)	West Hartford
Consolidated Controls Corp	Bethel
Fenn Mfg Co The (Hardened and Ground Gears assemblies)	Newington
Gabb Special Products Inc (filler caps—pressure fuel servicing systems)	Windsor Locks
Hamilton Standard Div United Aircraft Corp (propellers and other aircraft equipment)	Windsor Locks
Aircraft Engine Timing Tools	
Gabb Special Products Inc	Windsor Locks
Aircraft Engine Details	
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Aircraft Engines	
Lycoming Division Avco Manufacturing Corp	Stratford
Pratt & Whitney Aircraft Div United Aircraft Corp (aircraft)	East Hartford
Aircraft Fasteners	
Bland Burner Co The Thread Products Div	Hartford
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Scovill Manufacturing Company (PANELOC Aircraft Fasteners)	Waterbury
Aircraft Instruments	
Gorn Electric Company Inc	Stamford
Aircraft—Repair & Overhaul	
Airport Department Pratt & Whitney Aircraft Division	Rentschler Field East Hartford
Aircraft Studs and Bolts	
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Aircraft Test Equipment	
United Manufacturing Co Division of The W L Maxson Corp	Hamden
Alumilite Aluminum Sheets	
Leed Co The H A	Hamden
Aluminum Bronze Castings	
Knapp Foundry Company Inc	Guilford
Aluminum Castings	
Eastern Malleable Iron Company The	Naugatuck
Newton-New Haven Co 688 Third Avenue	West Haven
Aluminum Die Castings	
Mt Vernon Die Casting Corporation	Stamford
Stewart Die Casting Div. Stewart-Warner Corp.	Bridgeport
Aluminum Extrusions	
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Bridgeport Brass Company	Bridgeport
Consolidated Industries Inc	West Cheshire
Scovill Manufacturing Company	Waterbury 91
Aluminum Ingots	
Lapides Metals Corp	New Haven
Aluminum Sand Castings	
Bridgeport Deoxidized Bronze Corp	Bridgeport
Aluminum—Sheet and Rod	
Scovill Manufacturing Company	Waterbury
Aluminum—Sheets & Coils	
United Smelting & Aluminum Co Inc	New Haven
Ammunition	
Arms and Ammunition Div Olin Mathieson Chemical Corp	New Haven
Anodizing	
Aluminum Finishing Co.	Bridgeport
Comco Inc Div of Enthone Inc	New Haven
Leed Co The H A	Hamden
Anodizing Equipment	
Comco Inc Div of Enthone Inc	New Haven
Asbestos	
Auburn Manufacturing Company	The (gas-kets, packings, wicks) Middletown
Asarcon Bronze	
Derby Castings Company, The	Seymour
Knapp Foundry Company Inc (bushing & bearing stock)	Guilford
Assemblies—Small	
Barnes Co The Wallace Div Associated Spring Corp	Bristol
Greist Manufacturing Co The	New Haven
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Stanley Humason Inc	Forestville
J H Sessions & Son	Bristol
Audio-Visual Equipment	
Victor Animatograph Corp a div of Kalart (16mm sound and silent projectors; 35mm filmstrip and sound slide film projectors)	Plainville
Automatic Buffing & Polishing Machines	
Harper Buffing Machine Company The	East Hampton
Auto Cable Housing	
Wiremold Company The	Hartford
Automatic Assembly Machines	
Sperry Products Inc	Danbury
Automatic Control Instruments	
Bristol Co The (temperature, pressure, flow, humidity, time)	Waterbury
Automotive Bodies	
Metropolitan Body Company	Bridgeport
Automotive Parts	
Bridgeport Thermostat Div Robertshaw--Fulton Controls Co (automobile thermostats)	Milford
Eis Manufacturing Co (Hydraulic and Mechanical)	Middletown
Raybestos Division of Raybestos-Manhattan Inc (Brake Lining, Lined Brake Shoes, Clutch Facings, Automatic Transmission Parts, Fan Belts, Radiator Hose and Miscellaneous Rubber)	Bridgeport
Automotive & Service Station Equipment	
Scovill Manufacturing Company (Canned Oil Dispensers)	Waterbury 91
Automotive Tools	
Eis Manufacturing Company	Middletown
Bag Sealing Machines	
Derby Sealers Inc	Derby
Bags—Paper	
Continental Can Co Paper Container Div	Kensington
Bakelite Moldings	
Watertown Mfg Co The	Watertown
Balls	
Abbott Ball Co The (steel bearing and burnishing)	Hartford
Hartford Steel Ball Co The (steel bearing and burnishing, brass, bronze, monel, stainless aluminum)	Hartford
Kilian Steel Ball Corp The	Hartford
Pioneer Steel Ball Company Inc (steel for bearings, burnishing, graining; also brass, bronze and stainless)	Unionville
Superior Steel Ball Co Inc (steel bearings & burnishing material)	New Britain
Banbury Mixers	
Farrel-Birmingham Company Inc	Ansonia
Barrels	
Abbott Ball Co The (burnishing and tumbling)	Hartford
Esbec Barrel Finishing Corp (burnishing & tumbling)	Byram
Hartford-Steel Ball Co The (tumbling)	Hartford
Baskets—Wire	
Rolock Inc	Fairfield
Batteries	
Electrical Div Olin Mathieson Chemical Corp (flashlight, radio, hearing aid and others)	New Haven
Bearings	
Barden Corporation The (ball)	Danbury
Fafnir Bearing Co (ball)	New Britain
Marlin-Rockwell Corporation	Plainville
New Departure Div of General Motors (ball)	Bristol
Norma-Hoffman Bearings Corp (ball and roller)	Stamford
Bellows Assemblies	
Bridgeport Thermostat Div	Robertshaw--Milford
Fulton Controls Co	
Bellows—Metallic	
Bridgeport Thermostat Div	Robertshaw--Milford
Fulton Controls Co	
Bells	
Bevin Brothers Mfg Co	East Hampton
N N Hill Brass Co The	East Hampton
Belt Fasteners	
Saling Manufacturing Company (patented self-aligning)	Unionville
Belting	
Hartford Belting Co	Hartford
Russell Mfg Co (High Speed Endless, Laminated Rubber, Roll Stock all types)	Middletown
Bends—Pipe or Tube	
National Pipe Bending Co The	160 River St New Haven
Bicycle Coaster Brakes	
New Departure Div General Motors Corp	Bristol
Bicycle Sundries	
New Departure Div General Motors Corp	Bristol
Blackening Salts for Metals	
Enthone Inc	New Haven
Mitchell-Bradford Chemical Co	Milford
Black Oxide Finishing	
Black Oxide Inc	New Britain
Black Oxide Treatment	
Bennett Metal Treating Co The	1045 New Britain Ave Elmwood
Blades	
Capewell Manufacturing Company Metal Saw Division (hack saw and band saw)	Hartford
Blocks	
Howard Company (cupola fire clay)	New Haven
Blower Fans	
Colonial Blower Company	Plainville
Spencer Turbine Co The	Hartford
	(Advt.)

IT'S MADE IN CONNECTICUT

Blower Systems		Brass & Bronze Ingot Metal		Cabinet Work	
Colonial Blower Company	Plainville	Mitchell Smelting & Refining Co Inc	Botsford	Hartford Builders Finish Co	Hartford
Ripley Co	Middletown	Plume & Atwood Mfg Co The	Thomaston	Cable-Asbestos Insulated	
Blower Wheels		Whipple and Choate Company The	Bridgeport	Rockbestos Products Corp	New Haven
Torrington Manufacturing Company The	Torrington	Brass, Bronze, Aluminum Castings		Cable-Interlocked Armor	
Blueprints and Photostats		Derby Castings Company, The	Seymour	General Electric Company	Bridgeport
Joseph Merritt & Co	Hartford	Victors Brass Foundry Inc	Guilford	Cable-Nonmetallic Sheathed	
Boilers		Brass Goods		General Electric Company	Bridgeport
Bigelow Co The	New Haven	American Brass Company The	Waterbury	Cable-Service Entrance	
Bolts and Nuts		Plume & Atwood Mfg Co The (to order)	Waterbury	General Electric Company	Bridgeport
Clark Brothers Bolt Co	Milddale	Rostand Mfg Co The (Ecclesiastical Brass Wares)	Milford	Cages	
Boring Tools		Scovill Manufacturing Company (to order)	Waterbury 91	Andrew B Hendryx Co The (bird and animal)	New Haven
Atrax Company The (solid carbide)	Newington	Western Brass Mills Div Olin Mathieson Chemical Corp	New Haven	Cams	
Box Board		Brass Mill Products		American Cam Company Inc	Hartford
Bird & Son Inc	New Britain	American Brass Company The	Waterbury	Hartford Special Machinery Co The	Hartford
Continental Can Co., Boxboard and Folding Carton Division	Montville	Bridgeport Brass Co	Bridgeport	Rowbottom Machine Company Inc	Waterbury
Federal Paper Board Co Inc	Montville, New Haven & Versailles	Chase Brass & Copper Co	Waterbury	Cams, 2 Dimensional	
Lydall & Foulds Paper Co The	Manchester	Plume & Atwood Mfg Co The	Thomaston	Mallory Industries, Inc.	West Hartford
New Haven Board & Carton Co The	New Haven	Scovill Manufacturing Company	Waterbury 91	Parker-Hartford Corporation	Hartford
Robertson Paper Box Co	Montville	Western Brass Mills Div Olin Mathieson Chemical Corp	New Haven	Cams, 3 Dimensional	
Boxes		Breathing Equipment		Mallory Industries, Inc.	West Hartford
Bird & Son Inc (corrugated, solid fibre, cleated containers)	New Britain	Cycle-Flo Company The	Milford	Parker-Hartford Corporation	Hartford
Connecticut Container Corporation	New Haven	Brick-Building		Canvas Products	
Continental Can Co., Fibre Drum and Corrugated Box Division	Portland	Donnelly Brick Co The	New Britain	F B Skiff Inc	Hartford
Merriam Mfg Co (steel cash, bond, security, fitted tool and tackle boxes)	Middletown	Bricks-Fire		Capacitors	
Middletown Mfg Co (metal)	Middletown	Howard Company	New Haven	Electro Motive Mfg Co Inc The (mica & trimmer)	Willimantic
Warner Bros Co The (Acetate, Paper, Acetate and Paper Combinations, Counter Display, Setup)	Bridgeport	Mullite Works Refractories Div H K Porter Co Inc	Shelton	Carbide Drawing Dies	
Boxes and Crates		Bright Wire Goods		State Products Co (eyelet special shape dies)	Oakville
City Lumber Co of Bridgeport Inc The	Bridgeport	Sargent & Company (Screw Eyes, Screw Hooks, Cup Hooks, Hooks and Eyes, C H Hooks)	New Haven	Carbide Shape Dies	
Boxes-Folding		Broaching		Thomaston Tool & Die Co (any form)	Thomaston
Leshine Carton Co	Branford	Hartford Special Machinery Co The	Hartford	Carbide Tools	
Boxes-Metal		Bronze & Aluminum Castings		Atrax Company The (solid)	Newington
Merriam Mfg Co (Bond and Security, Cash and Utility, Personal Files and Drawer Safes)	Durham	Knapp Foundry Company Inc (rough or machined)	Guilford	Precision Tool & Die Co	Waterbury
Scovill Manufacturing Company (aluminum, brass, bronze, copper-cosmetic, drug, hair pin, ointment, pill, powder, rouge, vanity)	Waterbury	Bronze Sand Castings		Carbon Pile Type Resistors	
Boxes-Paper-Folding		Bridgeport Deoxidized Bronze Corp	Bridgeport	Engineered Metals	Manchester
Atlantic Carton Corp	Norwich	Brooms-Brushes		Card Clothing	
Bridgeport Paper Box Co	Bridgeport	Fuller Brush Co The	Hartford	Standard Card Clothing Co The (for textile mills)	Stafford Springs
Carpenter-Hayes Paper Box Co Inc	East Hampton	Buckles		Card Indexes	
Continental Can Co., Boxboard and Folding Carton Division	Montville	B Schwanda & Sons	Staffordville	Wassell Organization Inc	Westport
Curtis & Sons Inc S	Sandy Hook	Hawie Mfg Co The	Bridgeport	Carpenter's Tools	
Folding Cartons Incorporated (paper, folding)	Versailles	North & Judd Manufacturing Co	New Britain	Sargent & Company (Planes, Squares, Plumb Bobs, Bench Screws, Clamps and Saw Vices)	New Haven
H J Mills Inc	Bristol	Patent Button Co The	Waterbury	Carpet Cushion	
National Folding Box Co Div Federal Paper Board Co Inc (paper folding)	New Haven and Versailles	Risdon Manufacturing Co John M Russell Div	Naugatuck	B F Goodrich Sponge Products Division	Shelton
New Haven Board & Carton Co The	New Haven	Buffing & Polishing Compositions		Carpets and Rugs	
Robertson Paper Box Co	New Haven	Apothecaries Hall Company Division	Waterbury	Bigelow-Sanford Carpet Co	Thompsonville
Warner Bros Co The	Bridgeport	The Hubbard Hall Chemical Company	Waterbury	Carton Closure Equipment	
Boxes-Paper-Setup		Lea Mfg Co	Waterbury	Better Packages Inc ("Tape-O-Matic," "Better Pack")	Shelton
Bridgeport Paper Box Co	Bridgeport	Building Materials		Castors	
Heminway Corporation The	Waterbury	City Lumber Co of Bridgeport Inc	Bridgeport	Bassick Company The (Industrial and General)	Bridgeport
H J Mills Inc	Bristol	Burners		Castings	
Strouse Adler Company The	New Haven	Plume & Atwood Mfg Co The (kerosene oil lighting)	Thomaston	Connecticut Foundry Co (grey iron)	Rocky Hill
Warner Bros Co The	Bridgeport	Burners-Automatic		Connecticut Malleable Castings Co (malleable iron castings)	New Haven
Brake Cables		Peabody Engineering Corporation	Stamford	Ductile Iron Foundry Inc	Stratford
Eis Manufacturing Co	Middletown	Burners-Coal and Oil		Eastern Malleable Iron Company The (malleable iron, metal and alloy)	Naugatuck
Brake Linings		Peabody Engineering Corporation (Combined)	Stamford	Farrel-Birmingham Company Inc (Mechanite, Nodular, Iron, Steel)	Ansonia
Raybestos Division of Raybestos-Manhattan Inc (Automotive and Industrial)	Bridgeport	Burners-Gas		H R Engineering Laboratories Inc (centrifugal, steel mold)	East Haddam
Russell Mfg Co (all types, Fused Fabric, Durak, Wireback, Extruded)	Middletown	Peabody Engineering Corporation (Blast Furnace)	Stamford	Hartford Electric Steel Corp The (carbon, low alloy and stainless steel castings)	Hartford
Brake Service Parts		Burners-Gas and Oil		Malleable Iron Fittings Co (malleable iron and steel)	Branford
Eis Manufacturing Co	Middletown	Peabody Engineering Corporation (Combined)	Stamford	McLagan Foundry Co (grey iron)	New Haven
Brass & Bronze		Burners-Refinery		Newton-New Haven Co (zinc and aluminum)	688 Third Ave West Haven
American Brass Co The (sheet, wire, rods, tubes)	Waterbury	Peabody Engineering Corporation (For Gas and Oil)	Stamford	Nutmeg Crucible Steel Co (steel)	Branford
Bridgeport Rolling Mills Company (coil, sheet, strip)	Bridgeport	Burnishing		Plainville Casting Company (gray, alloy and high tensile irons)	Plainville
Bridgeport Brass Company (sheet, rod, wire and tubing)	Bridgeport	Abbott Ball Co The (Burnishing Barrells and Burnishing Media)	Hartford	Producto Machine Company The	Bridgeport
Bristol Brass Corp The (sheet, wire, rods)	Bristol	Pioneer Steel Ball Company Inc (balls, cones, other metallic shapes)	Unionville	Sako Aluminum Castings Inc	Fairfield
Chase Brass & Copper Co	Waterbury	Burs		Scovill Manufacturing Company (Brass & Bronze)	Waterbury 91
Miller Company The (phosphor bronze and brass in sheets, strips, rolls)	Meriden	Atrax Company The (carbide)	Newington	Turner & Seymour Mfg Co The (gray iron, semi steel and alloy)	Torrington
Plume & Atwood Mfg Co The (sheet, wire, rod)	Thomaston	Pratt & Whitney Co Inc	West Hartford	Union Mfg Co (grey iron & semi steel)	New Britain
Scovill Manufacturing Company	Waterbury 91	Busways		Waterbury Foundry Company The (highway & sash weights)	Waterbury
Seymour Mfg Co The (strip, sheet & wire)	Seymour	Distribution Assemblies Department General Electric Co	Plainville	Wilcox Crittenden & Co Inc (gray iron and brass)	Middletown (Adv.)
Tinsheet Metals Co The (sheets and rolls)	Waterbury	Buttons			
Western Brass Mills Division of Olin Industries Inc (sheet, strip)	New Haven	B Schwanda & Sons	Staffordville		
		Frank Parizek Manufacturing Co The	Putnam		
		Patent Button Co The	Waterbury		
		Scovill Manufacturing Company (Uniform and Tack Fasteners)	Waterbury 91		
		Waterbury Companies Inc (Uniform and Fancy Dress)	Waterbury		

IT'S MADE IN CONNECTICUT

Castings—Investment
Arwood Precision Casting Corp Groton

Cements—Refractory
Mullite Works Refractories Div H K Porter Co Inc Shelton

Centerless Grinding
Winsted Centerless Co Winsted

Centers
Ready Tool Co The (anti friction, carbide tipped, high speed) Stratford

Centrifugal Pumps
Hamco Inc (gasoline or electric driven) New Haven

Cermets
Russell Mfg Co (for missiles, and for friction materials) Middletown

Chain
Risdon Manufacturing Co John M Russell Div Naugatuck
Turner and Seymour Mfg Co The (weldless, sash, jack, safety, furnace, universal, lion and cable) Torrington

Chain—Bead
Auto-Swage Products Inc Shelton
Bead Chain Mfg Co The Bridgeport

Chain—Power Transmission and Conveying
Whitney Chain Company Hartford

Chairs
The Hitchcock Chair Company Riverton

Chemical Manufacturing
Carwin Company The North Haven

Chemicals
Apothecaries Hall Company Division
The Hubbard Hall Chemical Company Waterbury
Axton-Cross Co Shelton
Carwin Company The North Haven
Macalaster Bicknell Company New Haven
MacDermid Incorporated Waterbury
Naugatuck Chemical Division United States
Rubber Co Naugatuck
New England Lime Company Canaan
Pfizer & Co Inc Chas Groton
United States Chemical Corp (maintenance and powdered hand soap, floor waxes, cleaners, disinfectants, fuel additives) New Haven

Chemicals—Agriculture
Naugatuck Chemical Division United States
Rubber Co (insecticides, fungicides, weed killers) Naugatuck

Chemists—Analytical and Consulting
Bridgeport Testing Laboratory Inc Bridgeport

Christmas Light Clips
Foursome Manufacturing Co Bristol

Chromium Plating
Chromium Corp of America Waterbury
Chromium Process Company The Shelton

Chucks
Cushman Chuck Co The Hartford
Jacobs Manufacturing Co The West Hartford
Union Manufacturing Company New Britain

Chucks—Drill
Jacobs Manufacturing Co The West Hartford

Chucks & Face Plate Jaws
Cushman Chuck Co The Hartford
Union Mfg Co New Britain

Chucks—Power Operated
Cushman Chuck Co The Hartford
Union Manufacturing Company New Britain

Circuit Breakers
Circuit Protective Devices Dept., General Electric Co. Plainville

Clay
Howard Company (Fire Howard "B" and High Temperature Dry) New Haven

Cleaning Compounds
Enthone Inc (Industrial) New Haven
MacDermid Incorporated Waterbury

Clock Mechanisms
Lux Clock Mfg Co The Waterbury

Clocks
E Ingraham Co The Bristol
Seth Thomas Clocks Thomaston
United States Time Corporation The Waterbury

Clocks—Alarm
Lux Clock Mfg Co The Waterbury

Clocks—Automatic Cooking
Lux Clock Mfg Co The Waterbury

Clutches
Snow-Nabstedt Gear Corp The New Haven

Clutch Facings
Raybestos Division of Raybestos-Manhattan Inc (Molded, Woven, Semi-metallic and Full-metallic) Bridgeport
Russell Mfg Co (rubber Shock Cord—all sizes and types) Middletown

Coatings
Bischoff Chemical Corporation (Peelable Plastic Coatings) Ivoryton

Coil Winding Machines
Boesch Mfg Co Inc Danbury

Coils—Electric
Bittermann Electric Company Canaan

Coils—Pipe or Tube
National Pipe Bending Co The New Haven
Whitlock Manufacturing Co The Hartford

Cold Molded Electrical Insulation
Meriden Molded Plastics Meriden

Commercial Heat Treating
A F Holden Company The West Haven

Commercial Truck Bodies
Metropolitan Body Company Bridgeport

Compacts
Scovill Manufacturing Company (powder and rouge) Waterbury

Comparators
Pratt & Whitney Co Inc (Electro-limit and Air-O-Limit) West Hartford

Compressors
Norwalk Company Inc (high pressure air and gas) South Norwalk

Computers
Reflectone Corporation The Stamford

Concrete Products
Plastricrete Corp Hamden

Condenser and Heat Exchanger Tubes
Bridgeport Brass Company Bridgeport
Scovill Manufacturing Company Waterbury

Cones
Sonoco Products Co (Climax-Lowell Div) (Paper) Mystic

Connector
Gorn Electric Co Inc (precision miniature electrical and printed circuit) Stamford

Consulting Engineers
McNeal J D (Electrical and Electronic) New Haven
Stanley P Rockwell Co Inc The (Consulting) Hartford

Continuous Mill Gages
Pratt & Whitney Co Inc West Hartford

Contract Machining
Laurel Mfg Co Inc (Precision Production Small Parts) Plainville
Malleable Iron Fittings Company Branford

Contract Manufacturers
Fenn Mfg Co The (Precision Machine Work) Newington
Greist Mfg Co The (metal parts and assemblies) New Haven
Hartford Machine Screw Co Div of Standard Screw Co Hartford
Merriam Mfg Co (production runs—metal boxes and containers to specifications) Durham
Plume & Atwood Mfg Co The (metal parts and assemblies) Thomaston
Scovill Manufacturing Company (metal parts and assemblies) Waterbury 91
J H Sessions & Son Bristol

Controllers
Bristol Company The Waterbury
Manning Maxwell & Moore Inc Stratford

Controls—Remote
Panish Controls (Remote Controls for Marine & Aeronautic Applications) Bridgeport

Controls—Hydraulic Remote
Sperry Products Inc Danbury

Converters DC to AC
Electric Specialty Co Stamford

Conveyor Systems
Hayes-Te Equipment Corp Connecticut Conveyor Division (Conn-Veyor) Unionville
Leeds Conveyor Mfg Co The East Haven
Production Equipment Co Meriden

Copper
American Brass Corp The (sheet, wire, rods, tubes) Waterbury
Bridgeport Brass Company (sheet, rod, wire and tubing) Bridgeport
Bristol Brass Corp The (steel) Bristol
Chase Brass & Copper Co (sheet, rod, wire tube) Waterbury
Thinsheet Metals Co The (sheet and rolls) Waterbury
Western Brass Mills Div Olin Mathieson Chemical Corp New Haven

Copper Castings
Knapp Foundry Company Inc Guilford

Copper Sand Castings
Bridgeport Deoxidized Bronze Corp Bridgeport

Copper Sheets
American Brass Company The Waterbury
New Haven Copper Co The Seymour

Copper Shingles
New Haven Copper Co The Seymour

Copperware
Bridgeport Brass Company (cooking utensils) Bridgeport

Copper Water Tube
American Brass Company The Waterbury
Bridgeport Brass Co Bridgeport

Cord
Russell Mfg Co The (marine & aero shock) Middletown

Cords—Asbestos Insulated
General Electric Company Bridgeport

Cords—Braided
General Electric Company Bridgeport

Cords—Heater
General Electric Company Bridgeport

Cords—Portable
General Electric Company Bridgeport

Cord Sets—Electric
General Electric Company Bridgeport
Seeger-Williams Inc Bridgeport

Cork Cots
Sonoco Products Co (Climax-Lowell Div) Mystic

Correspondence Files
Wassell Organization Inc Westport

Corrugated Box Manufacturers
Connecticut Container Corporation New Haven
Corrugated Containers Inc Hartford

Corrugated Shipping Cases
Connecticut Container Corporation New Haven
Continental Can Co., Fibre Drum and Corrugated Box Division Portland
D L & D Container Corp New Haven

Cosmetic Containers
Eyelet Specialty Co The Waterbury
Plume & Atwood Mfg Co The (metal) Thomaston
Scovill Manufacturing Company Waterbury

Cosmetics
J B Williams Co The Glastonbury

Cotton and Asbestos Wicking
Bland Burner Co The Hartford

Counting Devices
Veeder-Root Inc Hartford

Couplings
Scovill Manufacturing Company (hose and tube) Waterbury

Crushers
Farrel-Birmingham Company Inc (Stone and Ore) Ansonia

Cups—Paper
Continental Can Co Paper Container Div Kensington

Cushioning for Packaging
Gilman Brothers Co The Gilman

Cutters
Atrax Company The (solid carbide) Newington
Mitrametric Co The (ground pinion) Torrington
Pratt & Whitney Co Inc (Milling Cutters all types) West Hartford

Cutting & Creasing Rule
Bartholomew Co H J Bristol

Decalcomanias
Sirocco Screenprints New Haven

Deep Hole Drilling & Reaming
Hamden Deep Hole Drilling Co Hamden
Wilson Arms Co The Hartford
(Adv.)

IT'S MADE IN CONNECTICUT

Deep Drawings
Stanley Pressed Metal New Britain

Delayed Action Mechanism
M H Rhodes Inc Hartford
R W Cramer Company Inc The Centerbrook

Deminerallizers
Crystal Research Laboratories Hartford

Design
Designers for Business and Industry (product design-appearance) New Haven

Design & Drafting Service
Smith & Winchester Mfg Co The South Windham

Diamonds—Industrial
Diamond Tool and Die Works Hartford

Dictating Machines
Dictaphone Corporation Bridgeport
Gray Manufacturing Company The Hartford
SoundScriber Corporation The New Haven

Die Cast Dies
C & F Tool & Die Corp Bridgeport

Die Castings
Newton-New Haven Co Inc New Haven

Die Casting Dies
ABA Tool & Die Co Manchester
Eastern Machine Screw Corp The Truman & New Haven
Barclay Sts Derby
Weimann Bros Mfg Co The

Die Heads—Self Opening
Eastern Machine Screw Corp The New Haven
Geometric Tool Division, Greenfield Tap & Die Corp New Haven

Die Polishing Machinery
Hartford Special Machinery Co The Hartford

Die Sets
Pratt & Whitney Co Inc (Precision) West Hartford
Producto Machine Company The Bridgeport
Union Mfg Co (precision, steel and semi-steel) New Britain

Die Sinks
Pratt & Whitney Co Inc West Hartford

Dies
Hoggson & Pettis Mfg Co The 141 Brewery St New Haven
Mitrametric Co The (ground for gears) Torrington
Pratt & Whitney Co Inc (Monocone and Ducone Dies) West Hartford

Dies & Die Cutting
Douglas Co Geo M New Haven

Display Containers
National Folding Box Co Div Federal Paper Board Co Inc (folding paperboard) New Haven and Versailles

Displays—Design & Production
Ad-Craft Displays, Inc. Bloomfield
Stifel & Kufra New Britain

Displays—Metal
Durham Mfg Co The (Designing & Mfg to customers' specifications) Durham
Merriam Mfg Co (Contract Work to Individual Specifications) Durham
Parsons Co Inc W A (custom designed)

Distribution Centers
Assemblies Department, General Electric Co Plainville

Door Closers
Sargent & Company New Haven
Yale & Towne Mfg Co The Stamford

Doors
Bilco Co The (metal, residential and commercial) West Haven

Dowel Pins
Allen Manufacturing Co The Hartford
Hartford Machine Screw Co Div of Standard Screw Co Hartford
Holo-Krome Screw Corp The West Hartford

Drafting Accessories
Joseph Merritt & Co Hartford

Drill Presses
Townsend Mfg Co The H P Elmwood

Drilling Machines
Howe & Fant Inc (Turret Type) East Norwalk
Pratt & Whitney Co Inc (Deep Hole) West Hartford

Drilling and Tapping Machinery
Hartford Special Machinery Co The Hartford

Drop Forgings
Atwater Mfg Co Plantsville
Billings & Spencer Co The Hartford
Consolidated Industries West Cheshire
Wilcox Crittenden & Co Inc Middletown

Druggists' Rubber Sundries
Seamless Rubber Company The New Haven

Duplicating Machines—Automatic
Pratt & Whitney Co Inc West Hartford

Duplicator Tables
Regent Machine Co Bridgeport

Elastic
Russell Mfg Co (rubber shock cord—all sizes and types) Middletown

Electric Cables
General Electric Company (for residential, commercial and industrial applications) Bridgeport
Rockbestos Products Corp (asbestos insulated) New Haven

Electric Cord Springs
Bristol Spring Manufacturing Co Plainville

Electric Cords
General Electric Company Bridgeport
Rockbestos Products Corp (asbestos insulated) New Haven

Electric Eye Control
Ripley Company Inc Middletown

Electric Fixture Wire
Rockbestos Products Corp (asbestos insulated) New Haven

Electric Hand Irons
Winsted Hardware Mfg Co (trade mark "Durable") Winsted

Electric Heating Elements
Hartford Element Co Hartford

Electric Ignition Harnesses
General Electric Company Bridgeport

Electric Insulation
Case Brothers Inc Manchester
Stevens Paper Mills Inc The Windsor

Electric Lighting Fixtures
Fan-Craft Mfg Co (residential, church, post lanterns) Plainville
Plume & Atwood Mfg Co The Thomaston
Wasley Products Inc Plainville

Electric Motor Controls
Arrow-Hart & Hegeman Electric Co The Hartford

Electric Motor Winding
Monarch Electric Co (3 phase industrial motors) New Britain

Electric Motor Repair
B & J Electric Co Ansonia

Electric Motors
Monarch Electric Co (Allis Chalmers) New Britain

Electric Signs
Berger Sign Co Hartford

Electric Switches
Arrow-Hart & Hegeman Electric Co The Hartford

Electric Time Controls
Cramer Controls Corporation The Centerbrook

Electric Underfloor Duct System
General Electric Company Bridgeport

Electric Wire
General Electric Company Bridgeport
Rockbestos Products Corp (asbestos insulated) New Haven

Electric Wiring Devices
Arrow-Hart & Hegeman Electric Co The Hartford

Electrical Appliances
Iona Manufacturing Company The Manchester

Electrical Conduit Fittings & Grounding Specialties
Gillette-Vibber Company The New London

Electrical Control Apparatus
Plainville Electrical Products Co The Plainville

Electrical Controls
Monarch Electric Co (Allis Chalmers) New Britain

Electrical Motors
Electric Specialty Co Stamford
Iona Manufacturing Company The Manchester
U S Electrical Motors Inc Milford

Electrical Recorders
Bristol Co The Waterbury

Electrical Relays and Controls
Allied Control Co Plantsville

Electrical Switchboards
Plainville Electrical Products Co The Plainville
Pneumatic Applications Co Simsbury

Electrical Test Equipment
McNeal J D New Haven

Electrical Wiring Systems
Wiremold Co The Hartford

Electronic Parts
Patent Button Company The Waterbury
Prentice Mfg Co The G E (stampings to customers' specifications) Kensington
Terryville Manufacturing Co (Stampings to customer specifications) Terryville

Electronics
Gray Manufacturing Company The Hartford
McNeal J D New Haven
Middletown Mfg Co (metal cabinets, chassis panels, brackets, cases) Middletown
Ripley Co Middletown
Sturup Larabee & Warmers Inc Middletown

Electroplating
Giering Metal Finishing Inc Hamden
National Sherardizing & Machine Co Hartford
Waterbury Plating Company Waterbury

Electroplating—Equipment & Supplies
Apothecaries Hall Company Division The Hubbard Hall Chemical Company Waterbury
Comco Inc Div of Enthone Inc New Haven
Lea Manufacturing Co The Waterbury
MacDermid Incorporated Waterbury

Electroplating Processes & Supplies
Enthone Inc New Haven

Electrotypes
Barnum-Hayward Electrotypes Co Inc New Haven
Lockwood Sons Inc Wm H Hartford
New Haven Electrotypes Div Electrographic Corp New Haven

Elevators
Eastern Elevator Co (passenger and freight) New Haven
General Elevator Service Co Hartford

Enameling
Giering Metal Finishing Inc Hamden
Waterbury Plating Company Waterbury

Enamels & Lacquers
Dobbs Chemical Co The (industrial finishes to customers' specifications) New Haven

End Milling Cutters
Pratt & Whitney Co Inc West Hartford

End Mills
Atrax Company The (solid carbide) Newington

Engraving—Plastic and Nonferrous Metals
Salisbury Products Inc Lakeville

Envelopes
Curtis 1000 Inc Hartford
United States Envelope Company Hartford Division Hartford

Envelopes—Stock and Special
Continental Can Co Paper Container Div Kensington

Extractors—Tap
Walton Company The West Hartford (Adv.)

I T ' S M A D E I N C O N N E C T I C U T

Extruders and Accessories
Davis Electric Company (Ram Type Teflon Extruder) Wallingford
Standard Machinery and Davis-Standard Divisions of Franklin Research Corp Mystic

Eyelets
American Brass Company The Waterbury
Mark Eyelet & Stamping Co (small-metal stampings) Wolcott
Platt Bros & Co The Waterbury
Plume & Atwood Mfg Co The Thomaston
Scovill Manufacturing Company Waterbury 91
Stevens Co Inc Waterbury
Waterbury Companies Inc Waterbury
Eyelets, Ferrules and Wiring Terminals
American Brass Company The Waterbury
Waterbury Companies Inc Waterbury

Eyelet Machine Products
American Brass Company The Waterbury
Ball & Socket Mfg Co The West Cheshire
Cold Forming Mfg Co The Waterbury
Plume & Atwood Mfg Co The Thomaston
Stevens Co Inc Waterbury
Waterbury Companies Inc Waterbury

Fabricators
Scovill Manufacturing Company (aluminum, brass, bronze, copper, steel) Waterbury

Fabrics
Russell Mfg Co (Teflon, Moulded Fabric, Bearing Surfaces, High Temperature Fabrics) Middletown

Fan Blades
Torrington Manufacturing Company The Torrington

Fancy Dress Buttons and Buckles
Waterbury Companies Inc Waterbury

Fans—Electric
General Electric Company Bridgeport
Monarch Electric Co (attic, industrial and ventilating) New Britain

Fasteners—Aircraft
Scovill Manufacturing Company (PANELOC Aircraft Fasteners) Waterbury

Fasteners—Laundry Proof
Scovill Manufacturing Company (GRIPPER snap fasteners) Waterbury

Fasteners—Slide & Snap
G E Prentice Mfg Co The Kensington
Scovill Manufacturing Company (GRIPPER zippers and GRIPPER snap fasteners) Waterbury

Felt
Auburn Manufacturing Company The (mechanical, cut parts) Middletown
Drycor Felt Company (paper makers and industrial) Staffordville

Felt—All Purpose
American Felt Co (Mill & Cutting Plant) Glenville
Chas W House & Sons Inc (Mills & Cutting Plant) Unionville

Fenders—Boat
B F Goodrich Sponge Products Division Shelton
Fiber-glass Fabrication
Davis Co The E J West Haven

Fibre Board
Bird & Son Inc New Britain
Case Brothers Inc Manchester
Colonial Board Company Manchester
C H Norton Co The North Westchester
Stevens Paper Mills Inc The Windsor

File Cards
Standard Card Clothing Co The Stafford Springs

Filing Equipment
Wassell Organization Inc Westport

Filters—Fluid
Cuno Engineering Corp The Meriden

Filters—Liquid
Alsop Engineering Corporation Milldale

Finger Nail Clippers
H C Cook Co The Ansonia

Firearms
Colt's Patent Fire Arms Mfg Co Inc Hartford
Junior Screw Machine Products Inc West Haven
Marlin Firearms Co The New Haven
O F Mosberg & Sons Inc New Haven
Arms and Ammunition Div Olin Mathieson Chemical Corp New Haven

Firearms Accessories
Poly Choke Co Inc The East Hartford

Fire Alarm Systems
Fire-Lite Alarms Inc New Haven

Fire Hose
Fabrics Fire Hose (municipal and industrial) Sandy Hook

Fireplace Goods
American Windshield & Specialty Co The 881 Boston Post Road Milford
John P Smith Co The (screens) New Haven

Fireworks
M Backes' Sons Inc Wallingford

Fishing Tackle
H C Cook The Ansonia

Flashlights
Bridgeport Metal Goods Mfg Co Bridgeport
Electrical Div Olin Mathieson Chemical Corp New Haven

Flat Springs
Bristol Spring Manufacturing Co Plainville
Gemco Manufacturing Co Inc Southington

Flexible Shaft Machines
Pratt & Whitney Co Inc West Hartford

Floot Switches
Gorn Electric Co Inc (for aircraft and commercial use) Stamford

Floor & Ceiling Plates
Beaton & Cadwell Mfg Co The New Britain

Fluorescent Lighting Equipment
Fullerton Manufacturing Corp Norwalk
Vanderman Manufacturing Co The Willimantic
Wiremold Company The Hartford

Foam Rubber
Armstrong Rubber Company The West Haven

Forgings
Atwater Manufacturing Company Plantsville
Billings & Spencer Company Hartford
Capewell Manufacturing Company Hartford
Clark Brothers Bolt Co Milford
Consolidated Industries Inc West Cheshire
Heppenstall Co (all kinds and shapes) Bridgeport

Scovill Manufacturing Company (Non-ferrous) Waterbury 91

Foundries
Connecticut Malleable Castings Co (malleable iron castings) New Haven
Derby Castings Company, The Seymour
Ductile Iron Foundry Inc Stratford
Farrel-Birmingham Company Inc (Iron and Steel) Ansonia
Hartford Electric Steel Corp The Hartford
Malleable Iron Fittings Co (Malleable Iron and Steel Castings) Branford
Plainville Casting Company (gray, alloy and high tensile irons) Plainville
Producto Machine Company The Bridgeport
Smith & Winchester Mfg Co The South Windham

Turner & Seymour Mfg Co The (gray, iron, semi steel and alloy) Torrington
Union Mfg Co (gray iron & semi steel) New Britain

Wilcox Crittenden & Co Inc (iron, brass, aluminum and bronze) Middletown

Fountain Pens and Mechanical Pencils
Waterman Pen Company Inc Seymour

Foundry Riddles
John P Smith Co The New Haven

Four Slide Forms
Peck Spring Co Plainville

Frames—Hack Saw
Thompson & Son Co The Henry G New Haven

Fuel Oil Pump and Heater Sets
Peabody Engineering Corporation Stamford

Furnaces
Norwalk Airconditioning Corp South Norwalk

Gate Blocks
Pratt & Whitney Co Inc (Alloy steel and Carbide, Hoke and USA) West Hartford

Galvanizing
Malleable Iron Fittings Co Branford
Wilcox Crittenden & Co Inc Middletown

Gaskets
Auburn Manufacturing Company The (from all materials) Middletown
Raybestos Division of Raybestos-Manhattan Inc Bridgeport

Gaskets—Insulation
American Felt Co Glenville

Gas Range Conversion Burner
Holyoke Heater Corp of Conn Inc Hartford

Gas Scrubbers, Coolers and Absorbers
Peabody Engineering Corporation Stamford

Gauges
Bristol Co The (pressure and vacuum-recording automatic control) Waterbury
Helicoid Gage Division American Chain & Cable Co The (pressure and vacuum) Bridgeport

Manning Maxwell & Moore Inc Stratford
New Haven Trap Rock Co The Machine Products Div (Johan Universal and Special Purpose Gauge) North Branford

Pratt & Whitney Co Inc (Precision Measurement all types) West Hartford

Gears
Mitrametric Co The (blanked fine pitch) Torrington

Gears and Gear Cutting
Farrel-Birmingham Company Inc Ansonia
Fenn Mfg Co The Newington
Hartford Special Machinery Co The Hartford
United Gear & Machine Co Suffield

Generators
Hamco Inc (electric, portable, gasoline driven) New Haven

Glass Blowing
Macalaster Bicknell Company New Haven

Glass Cutters
Fletcher-Terry Co The Forestville

Greeting Cards
A D Steinbach & Sons Inc New Haven

Grinding
Farrel-Birmingham Company Inc (Roll and Cylindrical) Ansonia
Hartford Special Machinery Co The (gears, threads, cams and splines) Hartford
Horberg Grinding Industries Inc (Precision custom grinding: centerless, cylindrical, surfaces, internal and special) Bridgeport

Grinding Heads—Internal
Pratt & Whitney Co Inc (Pneumatic, High Speed) West Hartford

Grinding Machines
Farrel-Birmingham Company Inc (Roll) Ansonia

Pratt & Whitney Co Inc (Surface, Die, Gear and Cutter Grinders) West Hartford
Rowbottom Machine Company Inc (cam) Waterbury

Grommets
American Brass Company The Waterbury
Plume & Atwood Mfg Co The Waterbury

Guards for Machinery
Wheeler Co The G E New Haven

Hack and Band Saw Blades
Capewell Manufacturing Co The Hartford

Hair Hygiene Preparations
Parker Herbex Corporation Stamford

Hammers—Carpenters and Machinists
Capewell Manufacturing Company Hartford

Hand Tools
Billings and Spencer Company (wrenches sockets and shop tools) Hartford
Bridgeport Hdwe Mfg. Corp The (nail pullers, scout axes, box opening tools, towels, coping saws, putty knives) Bridgeport

Hardness Testers
Wilson Mechanical Instrument Div American Chain & Cable Company Inc Bridgeport

Hardware
Bassick Company The (Automotive) Bridgeport
City Lumber Co of Bridgeport Inc Bridgeport

Gordon Associates Derby
Harlock Products Corp New Haven
Sargent & Company New Haven
Wilcox Crittenden & Co Inc (marine heavy and industrial) Middletown
Yale & Towne Mfg Co The Stamford

Hardware—Marine & Bus
Rostand Mfg Co The Milford

Hardware—Trailer Cabinet
Excelsior Hardware Co The Stamford

Hardware, Trunk & Luggage
Corbin Cabinet Lock Div American Hardware Corp New Britain
J H Sessions and Son Bristol
Yale & Towne Mfg Co The Stamford

Hat Machinery
Doran Bros Inc Danbury

Health Surgical & Orthopedic Supports
Berger Brothers Company The (custom made for back, breast and abdomen) New Haven

Heat Elements
Electroflex Heat Inc Hartford
Safeway Heat Elements Inc (woven wire resistance type) Middletown

Heat Exchangers
Whitlock Manufacturing Co The Hartford

Heat Treating
Bennett Metal Treating Co The 1045 New Britain Ave Elmwood
Commercial Metal Treating Co Bridgeport
New Britain-Gridley Machine Division New Britain
The New Britain Machine Co New Britain
New Haven Heat Treating Co, Inc. New Haven
Skene Co Inc The William A (metals) Bridgeport

Stanley P Rockwell Co Inc The Hartford (Adv't.)

IT'S MADE IN CONNECTICUT

Heat-Treating Equipment

Barnes Co The Wallace Div Associated Spring Corp
Bauer & Company Inc
Rolock Inc (Retorts, Muffles, etc.)
Stanley P Rockwell Co Inc The (commercial)
296 Homestead Ave

Heat Treating Fixtures

Rolock Inc (Trays, Baskets, etc.)
Wiretext Mfg Co Inc

Heat Treating Salts and Compounds

Mitchell-Bradford Chemical Co

Heaters—Electric

General Electric Company

Heating and Cooling Coils

G & O Manufacturing Co

Heating Elements

Hartford Element Co

Heavy Chemicals

Naugatuck Chemical Division United States Rubber Co (sulphuric, nitric and muriatic acids and aniline oil)

Heavy Machinery

Smith & Winchester Mfg Co The

Hex-Socket Screws

Allen Manufacturing Company The
Bristol Company The
Hartford Machine Screw Co Div of Standard Screw Co
Holo-Krome Screw Corp The

High Frequency Alternators

Electric Specialty Co

Highway Guard Rail Hardware

Malleable Iron Fittings Co

Hinges

Homer D Bronson Company

Hobs and Hobblings

ABA Tool & Die Co
Pratt & Whitney Co Inc (Die and Thread milling)

Hoists and Trolleys

Union Mfg Company

Hose Fittings

Scovill Manufacturing Company

Hose—Flexible Metallic

American Brass Co
American Metal Hose Branch

Hose Supporter Trimmings

Hawle Mfg Co The (So-Lo Grip Tabs)

Hydraulic Brake Fluids

Eis Manufacturing Co

Hypodermic Needles

Roehr Products Company

Impregnating

American Metaseal Inc (metal, wood, etc.)

Industrial Chrome Plating

Mirror Polishing & Buffing Co

Industrial Displays

Sansone Co S Frederick (Designers Builders and Counselors)

Industrial Finishes

Chemical Coatings Corporation

Inhalators

Cycle-Flo Company The

Inks

Waterman Pen Company Inc

Insecticides

American Cyanamid Company

Instalment Payment Books

Wassell Organization Inc

Insulated Wire & Cable

General Electric Company (for residential commercial and industrial applications)

Insulated Wire & Cable Machinery

Davis Electric Company

Instruments

Bristol Company The
J-B-T Instruments Inc
Manning Maxwell & Moore Inc
Pratt & Whitney Co Inc (Precision Measuring)

Integrators

Reflectone Corporation The

Interval Timers

Lux Clock Manufacturing Company
Rhodes Inc M H

Jacquard

Case Brothers Inc

Japanning

H Sessions & Son

Jig Borer

Linley Brothers Company
Moore Special Tool Co (Moore)
Pratt & Whitney Co Inc

Jigs, Fixtures & Gages

Federal Machine & Tool Co

Jig Grinder

Moore Special Tool Co (Moore)

Junior Automobiles

Power Car Company

Keller Machines

Pratt & Whitney Co Inc

Key Blanks

Sargent & Company
Yale & Towne Mfg Co The

Labels

Naugatuck Chemical Division United States Rubber Co (for rubber articles)

Label Dispensers

Derby Sealers Inc (pressure-sensitive labels)

Label Moisteners

Better Packages Inc ("Counterboy"—"Packer")

Derby Sealers Inc

Laboratory Equipment

Eastern Industries Inc

Laboratory Supplies

Macalaster Bicknell Company

Laces

American Fabrics Company The
Wilcox Lace Corporation

Laces and Nettings

Wilcox Lace Corporation The

Lacquers & Synthetic Enamels

Chemical Coatings Corporation
I-Sia Chemicals Inc

Ladders

A W Flint Co
196 Chapel St New Haven

Laminated Metal

Bridgeport Brass Company

Lamps

Plume & Atwood Mfg Co The (metal oil)

Lampholders—Incandescent and Fluorescent

General Electric Company

Lamp Shades

Verplex Company The

Lanterns—Battery Operated

Electrical Div Olin Mathieson Chemical Corp

Lathes—Hydra Feed

Bullard Co The (automatic tracer on multiple tool)

Lathes—Man-Au-Trol

Bullard Company The (single spindle-automatic)

Lathes—Mult-Au-Matic

Bullard Company The (vertical multi-spindle-indexing type)

Lathes—Toolroom and Automatic

Pratt & Whitney Co Inc

Lathes—Vertical Turret

Bullard Company The (single spindle)

Lead Plating

Christie Plating Co The

Leather

Norwich Leather Co
Herman Roser & Sons Inc (Genuine Pigskin)

Leather Dog Furnishings

Andrew B Hendryx Co The
The Smith-Worthington Saddlery Co

Leather Goods Trimmings

G E Prentice Mfg Co The

Leather, Mechanical

Auburn Manufacturing Company The (packings, cubs, washers, etc.)

Letterheads

Lehman Brothers Inc (designers, engravers, lithographers)

Levels—Machinist's Precision

Bullard Company The

Lighting Accessories—Fluorescent

General Electric Company

Lighting Equipment

Fullerton Manufacturing Corp
Miller Co The (Miller, Ivanhoe)

Lime

New England Lime Company

Lipstick Cases

Scovill Manufacturing Company

Lipstick Containers

Bridgeport Metal Goods Mfg Co
Plume & Atwood Manufacturing Co

Lithographers

O'Toole & Sons Inc T

Lithographing

Kellogg & Bulkeley A Division of Connecticut Printers Inc
Lehman Brothers Inc
A D Steinbach & Sons

Locks—Banks

Yale & Towne Mfg Co The

Locks—Builders

Sargent & Company
Yale & Towne Mfg Co The

Locks—Cabinet

Excelsior Hardware Co The
Yale & Towne Mfg Co The

Locks—Special Purpose

Yale & Towne Mfg Co The

Locks—Suitcase and Trimmings

Excelsior Hardware Co The

Locks—Trunk

Excelsior Hardware Co The
Yale & Towne Mfg Co The

Locks—Zipper

Excelsior Hardware Co The

Loom—Non-Metallic

Wiremold Company The

Lubricating System—Mist

Thompson & Son Co The Henry G

Lumber & Millwork Products

City Lumber Co of Bridgeport Inc

Machetes

Collins Company The

Machine Design

Black Rock Mfg Company The

Machine Overload Monitors

Sperry Products Inc

Machine Shop Fabrication

Smith & Winchester Mfg Co The
South Windham (Adv.)

I T ' S M A D E I N C O N N E C T I C U T

Machine Tools		Machines—Paper Ruling		Metal Formings	
Bullard Company The	Bridgeport	John McAdams & Sons Inc	Norwalk	Master Engineering Company	West Cheshire
Farrel-Birmingham Company Inc	Ansonia			Stanley Pressed Metal	New Britain
Pratt & Whitney Co Inc	West Hartford	Machines—Precision Boring		Metallurgists	
Producto Machine Company The	Bridgeport	New Britain-Gridley Machine Division	New Britain	Bridgeport Testing Laboratory Inc	Bridgeport
Machine Work		Machines—Rolling		Metal Mouldings	
Banthin Engineering Co	Bridgeport	Fenn Manufacturing Company The	Newington	Leed Co The H A	Hamden
Black Rock Mfg Company The	Bridgeport	Machines—Slotting		Metal Novelties	
Farrel-Birmingham Company Inc	Ansonia	Waterbury Farrel Foundry & Machine Co The	Waterbury	H C Cook Co The	32 Beaver St Ansonia
Fenn Manufacturing Company The (precision parts)	Newington	(screw head)	Waterbury	Metal Products—Stampings	
Hartford Special Machinery Co The (contract work only)	Hartford	Machines—Spacing Table		American Brass Company The	Waterbury
National Sheradizing & Machine Co (Job)	Hartford	Bullard Company The	Bridgeport	Plume & Atwood Manufacturing Co	Thomaston
Parker-Hartford Corporation	Hartford	Machines—Special		Prentice Mfg Co The G E	Kensington
Swan Tool & Machine Co The	Hartford	Fenn Mfg Co The	Newington	J H Sessions & Son	Bristol
Torrington Manufacturing Co The (special rolling mill machinery)	Torrington	Fuller Brush Co The	Hartford	Scovill Manufacturing Company	(Made-to-Order) Waterbury 91 New Britain
Machinery		Machines—Swaging		Metal Specialties	
Davis Electric Company (Wire and Cable)	Wallingford	Fenn Manufacturing Company The	Newington	Excelsior Hardware Co The	Stamford
Fenn Manufacturing Company The (special)	Newington	Machines—Thread Rolling		Metal Spinning	
Hallden Machine Company The (mill)	Thomaston	Hartford Special Machinery Co The	Hartford	Moseley Metal Crafts Inc	West Hartford
Torrington Manufacturing Co The (mill)	Torrington	Peterson Division, Mettler Machine Tool, Inc.	New Haven	Metal Stampings	
Machinery—Automatic		Waterbury Farrel Foundry & Machine Co The	Waterbury	American Brass Company The	Waterbury
Banthin Engineering Company (new and rebuilt)	Bridgeport	Machines—Turks Head		Better Formed Metals Inc	Waterbury
Machinery—Bolt and Nut		Fenn Manufacturing Company The	Newington	DooVal Tool & Mfg Inc The	Naugatuck
Waterbury Farrel Foundry & Machine Co The	Waterbury	Machines—Wire Drawing		Excelsior Hardware Co The	Stamford
Machinery—Cold Heading		Fenn Manufacturing Company The	Newington	Greist Mfg Co The	503 Blake St New Haven
Waterbury Farrel Foundry & Machine Co The	Waterbury	Machining—Horizontal Boring		H C Cook Co The	32 Beaver St Ansonia
Machinery Dealers & Rebuilders		Tucker Machine Co	North Haven	Stanley Humason Inc	Forestville
Botwinik Brothers	New Haven	Manganese Bronze Ingot		Mohawk Mfg Co (threaded)	Middletown
J L Lucas and Son	Fairfield	Whipple and Choate Company	Bridgeport	J A Otterbein Company The (metal fabrications)	Middletown
State Machinery Co Inc	New Haven	Manicure Instruments		J H Sessions & Son	Bristol
Machinery—Extruding		W E Bassett Company The	Derby	Patent Button Co The	Waterbury
Standard Machinery and Davis-Standard Divisions of Franklin Research Corp	Mystic	Marine Equipment		G E Prentice Mfg Co The	Kensington
Machinery—Metal-Working		Wilcox-Crittenden Div North & Judd Mfg Co	Middletown	Plume & Atwood Mfg Co The	Thomaston
Fenn Mfg Co The	Newington	Marine Reserve Gears		Saling Manufacturing Company	Unionville
Waterbury Farrel Foundry & Machine Co The	Waterbury	Snow-Nahstedt Gear Corp The	New Haven	Stanley Pressed Metal	New Britain
Pratt & Whitney Co Inc	West Hartford	Marking Devices		Swan Tool & Machine Co The	Hartford
Machinery—Nut		Cooney Engraving Co	Branford	Terryville Manufacturing Co	Terryville
Waterbury Farrel Foundry & Machine Co The (forming and tapping)	Waterbury	Hoggson & Pettis Mfg Co The	New Haven	Verriex Company The (Contract)	Essex
Machinery—Screw and Rivet		Parker-Hartford Corporation (steel)	Hartford	Waterbury Lock & Specialty Co The	Milford
Waterbury Farrel Foundry & Machine Co The	Waterbury	Marking Tools		Meters—Gas	
Machinery—Wire Drawing		Parker-Hartford Corporation	Hartford	Sprague Meter Company	Bridgeport
Fenn Mfg Co The	Newington	Materials Handling		Meters—Parking	
Waterbury Farrel Foundry & Machine Co The	Waterbury	Hayes-Te Equipment Corp Connecticut Conveyor Division (Conn-Veyor)	Unionville	Rhodes Inc M H	Hartford
Machinery—Wire Straightening		Parsons Co Inc W A (tote pans)	Durham	Microfilming	
Mettler Machine Tool Inc	New Haven	Mats—Newspaper		American Microfilming Service Co	New Haven
Machinery—Wire Straightening and Cutting		Lockwood Sons Inc Wm H	Hartford	Cine-Video Productions Inc	Milford
Mettler Machine Tool, Inc.	New Haven	Mattresses		Milk Bottle Carriers	
Machines		Waterbury Mattress Co	Waterbury	John P Smith Co The	423-33 Chapel St New Haven
Campbell Machine Div American Chain & Cable Co Inc (cutting & nibbling)	Bridgeport	Metal Boxes		Mill Machinery	
Coulter & McKenzie Machine Co The (special, new development engineering design and construction)	Bridgeport	Parsons Co Inc W A (tool kits)	Durham	Torrington Manufacturing Company The	Torrington
Patent Button Company The	Waterbury	Metal Boxes and Displays		Milling Machines	
Machines Automatic		Durham Mfg Co The (Designing & Mfg to customers' specifications)	Durham	Pratt & Whitney Co Inc (Keller Tracer—Controlled Milling Machines)	West Hartford
Globe Tapping Machine Co	Bridgeport	Merriam Mfg Co (Bond, Security, Cash, Utility, Personal Files, Drawer Safes, Custombuilt containers and displays)	Durham	Rowbottom Machine Company Inc (cam)	Waterbury
Machines—Automatic Chucking		Middletown Mfg Co	Middletown	Mill Products	
Bullard Company The	Bridgeport	Metal Cleaners		Scovill Manufacturing Company (aluminum, brass, bronze, nickel silver—sheet, rod, wire, tube)	Waterbury
New Britain-Gridley Machine Division	New Britain	Apothecaries Hall Company Division	Waterbury	Mill Supplies	
The New Britain Machine Co (multiple spindle and double end)	New Britain	The Hubbard Hall Chemical Company	Waterbury	Wilcox-Crittenden Div North & Judd Mfg Co	Middletown
Pratt & Whitney Co Inc (Potter & Johnson)	West Hartford	Entone Inc		Millwork	
Machines—Brushing		MacDermid Incorporated	New Haven	Hartford Builders Finish Co	Hartford
Fuller Brush Co The	Hartford	Metal Displays		Miniature Precision Connectors	
Machines—Contn-U-Matic		Durham Mfg Co The	Durham	Gorn Electric Co	Stamford
Bullard Company The (verticle multi-spindle—continuous turning)	Bridgeport	Metal Finishes		Minute Minders	
Machines—Draw Benches		Entone Inc	New Haven	Lux Clock Mfg Co The	Waterbury
Fenn Manufacturing Company The	Newington	Mitchell-Bradford Chemical Co	Milford	Mirror Rosettes and Hangers	
Machines—Forming		Metal Finishing		Waterbury Companies Inc	Waterbury
Nilson Machine Company The A H (four-slide wire and ribbon stock)	Shelton	Hartford Industrial Finishing Co	Hartford	Mixers—Liquid	
		National Sheradizing & Machine Co	Hartford	Alsop Engineering Corporation	Milddale
		Waterbury Plating Company	Waterbury	Mixing Equipment	
				Eastern Industries Inc	New Haven
				Model Work	
				B & N Tool & Engineering Co (instruments and timing devices)	Oakville
				Mops	
				Fuller Brush Co The	Hartford (Advt.)

IT'S MADE IN CONNECTICUT

Motion Picture Equipment	
Victor Animatograph Corp a div of Kalart (16mm sound and silent projectors film splicers and rewinders)	Plainville
Motion Pictures	
Cine-Video Productions Inc	Milford
Motor Control Centers	
Distribution Assemblies Department, Electric Co	General Plainville
Motor-Generator Sets	
Electric Specialty Co	Stamford
Motors-Electric Timing	
Cramer Controls Corporation The	Centerbrook
Motors-Synchronous	
Cramer Controls Corporation The	Centerbrook
Electric Specialty Co	Stamford
Moulded Plastic Products	
Butterfield Inc T F	Naugatuck
Patent Button Co The	Waterbury
Scott & Sons Mfg Co Geo. S.	Wallingford
Waterbury Companies Inc	Waterbury
Watertown Mfg Co The	117 Echo Watertown
Mouldings	
Himmel Brothers Co The (architectural, metal and store front)	Hamden
Moulds	
ABA Tool & Die Co	Manchester
Hogson & Pettis Mfg Co The (steel)	New Haven
114 Brewery St	
Name Plates	
Cooney Engraving Co	Brantford
Seton Name Plate Co (metal & plastic name plates and identification tags)	New Haven
Napper Clothing	
Standard Card Clothing Co The (for textile mills)	Stafford Springs
Nettings	
Wilcox Lace Corp The	Middletown
Newspaper Mats	
Lockwood Sons Inc Wm H	Hartford
Nickel Anodes	
Apothecaries Hall Company Division	
The Hubbard Hall Chemical Company	Waterbury
Nickel Silver	
American Brass Company The	Waterbury
Bridgeport Brass Company	Bridgeport
Plume & Atwood Mfg Co The	Thomaston
Seymour Mfg Co The	Seymour
Waterbury Rolling Mills Inc (sheets, strips, rolls)	Waterbury
Western Brass Mills Div Olin Mathieson Chemical Corp (sheet, strip)	New Haven
Nickel Silver Ingot	
Whipple and Choate Company The	Bridgeport
Night Latches	
Sargent & Company	New Haven
Yale & Towne Mfg Co Inc	Stamford
Non-ferrous Metal Castings	
Miller Company The	Meriden
Nuts, Bolts and Washers	
Clark Brothers Bolt Co	Milldale
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Office Equipment	
Pitney-Bowes Inc	Stamford
Underwood Corporation Bridgeport & Wassell Organization Inc	Hartford Westport
Offset Printing	
Kellogg & Bulkeley A Division of Printers Inc	Connecticut Hartford
Oil Burners	
Miller Company The (domestic)	Meriden
Peabody Engineering Corp (Mechanical and/or Steam Atomizer)	Stamford
Silent Glow Oil Burner Corp The	Hartford
Oil Tanks	
Norwalk Tank Co The (\$50 to 30M gals, underwriters above and under ground)	South Norwalk
Whitlock Manufacturing Co The	Hartford
Oils-Cutting	
Anderson Oil Co Inc F E	Portland
Open Knife Switches and Accessories	
Circuit Protective Devices Dept., General Electric Co.	Plainville
Optical Cores & Ingots	
Plume & Atwood Mfg Co The	Thomaston
Otis Woven Awning Stripes	
The Falls Company	Norwich
Ovens-Electric	
Bauer & Company Inc	Hartford
Packaging-Engineering	
Commerce Packaging Corp	Stamford
National Export Corp. (Military and Commercial—equipped for domestic and export packaging, canning, crating and shipping)	New Haven
Packaging & Packing	
Commerce Packaging Corp	Stamford
Mercer & Stewart Co The	Hartford
Packing	
Auburn Manufacturing Company The (leather, rubber, asbestos, fibre)	Middletown
Raybestos Division of Raybestos-Manhattan Inc (Asbestos and Rubber Sheet)	Bridgeport
Padlocks	
Sargent & Company	New Haven
Waterbury Lock & Specialty Co The	Millford
Yale & Towne Mfg Co Inc	Stamford
Pads-Office	
The Baker Goodyear Company	Brantford
Paints	
Tredennick Paint Manufacturing Co The	Meriden
Paints and Enamels	
Staminate Corp The	New Haven
Panelboards—Lighting and Distribution	
Distribution Assemblies Department, General Electric Co	Plainville
Panelyte	
Leed Co The H A	Hamden
Panels	
Moore Special Tool Co (crush wheel dresser)	Bridgeport
Paperboard	
Continental Can Co., Boxboard and Folding Carton Division	Montville
Federal Paper Board Co Inc	
New Haven Board & Carton Co The	New Haven
Montville, New Haven & Versailles	Montville
Robertson Paper Box Co	
Paper Boxes	
Atlantic Carton Corp (folding)	Norwich
National Folding Box Co Div Federal Paper Board Co Inc (folding)	New Haven & Versailles
Mills Inc H J	Bristol
New Haven Board & Carton Co The	New Haven
Robertson Paper Box Co (folding)	Montville
Paper Boxes—Folding and Setup	
Bridgeport Paper Box Company	Bridgeport
M Backers' Sons Inc	Wallingford
Paper Clips	
H C Cook Co The (steel) 32 Beaver St	Ansonia
Paper Mill Machinery	
Farrel-Birmingham Company Inc	Ansonia
Paper Tubes and Cores	
Sonoco Products Co (Climax-Lowell)	Div Mystic
Parallel Tubes	
Sonoco Products Co (Climax-Lowell)	Div Mystic
Parking Meters	
Rhodes Inc M H	Hartford
Parts	
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Scovill Manufacturing Company (ammunition, electric instrument, electrical appliance, fountain pen, instrument, lighting fixture, ordnance, etc.—blanked, stamped, formed, drawn, re-drawn, forged, screw machined, headed, pointed, finished)	Waterbury
Pattern-Makers	
Farrel-Birmingham Company Inc	Ansonia
Pattern Shop	
Smith & Winchester Mfg Co The	South Windham
Penlights	
Bridgeport Metal Goods Mfg Co	Bridgeport
Pet Furnishings	
Andrew B Hendrix Co The	New Haven
Phosphor Bronze	
American Brass Company The	Waterbury
Bridgeport Brass Company	Bridgeport
Miller Company The (sheets, strips, rolls)	Meriden
Seymour Mfg Co The	Seymour
Waterbury Rolling Mills Inc (sheets, strips, rolls)	Waterbury
Western Brass Mills Div Olin Mathieson Chemical Corp (sheets, strip)	New Haven
Phosphor Bronze Ingots	
Whipple and Choate Company The	Bridgeport
Photo Engraving	
Dowd Wyllie & Olson Inc	Hartford
Wilcox Photo Engraving Co Inc	New Haven
Photoflash Batteries	
Electrical Div Olin Mathieson Chemical Corp	New Haven
Photographic Equipment	
Electrical Div Olin Mathieson Chemical Corp	New Haven
Kalart Company Inc	Plainville
Piano Repairs	
Pratt Read & Co Inc (keys and action)	Ivoryton
Piano Supplies	
Pratt Read & Co (keys and actions, backs, plates)	Ivoryton
Pins	
CEM Company ("Spirol")	Danielson
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Pin Up Lamps	
Verplex Company The	Essex
Pipe	
American Brass Co The (brass and copper)	Waterbury
Bridgeport Brass Co (brass and copper)	Bridgeport
Chase Brass & Copper Co (red brass and copper)	Waterbury
Howard Co (cement well and chimney)	New Haven
Pipe Fittings	
Malleable Iron Fittings Co	Brantford
Pipe Plugs	
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Holo-Krome Screw Corporation The (counter-sunk)	West Hartford
Pipe Plugs—Socketed	
Hartford Machine Screw Co Div of Standard Screw Co	Hartford
Holo-Krome Screw Corp The	West Hartford
Pistols & Revolvers	
Colt's Patent Fire Arms Mfg Co Inc	Hartford
Plastic Coatings	
Bischoff Chemical Corporation (Peelable Plastic Coatings)	Ivoryton
Plastic Bottles	
Plax Corporation	Bloomfield
Plastic Buttons	
Frank Parizek Manufacturing Co The	West Willington
Patent Button Co The	Waterbury
Plastic Engraving	
Salisbury Products Inc	Lakeville
Plastic Extruders	
Jessall Plastics, Inc.	Kensington
Plastic Extruders	
Jessall Plastics Inc	Kensington
Plastic Fabrication	
Humphrey Fabricating Corporation	Unionville
Salisbury Products Inc	Lakeville
Plastic Film & Sheet Materials	
Gilman Brothers Co The	Gilman
Plax Corporation	Bloomfield
Plastic Lining Equipment	
Comco Inc Div of Enthone Inc	New Haven
Plastic Machinery	
Black Rock Mfg Company The	Bridgeport
Plastic Molders	
Plastic Molding Corporation	Sandy Hook
Plastic Molding	
Butterfield Inc T F	Naugatuck
U S Plastic Molding Corporation	Wallingford
Plastic—Moulders	
Conn Plastics	Waterbury
Scott & Sons Mfg Co Geo. S.	Wallingford
Waterbury Companies Inc	Waterbury
Watertown Mfg Co The	Watertown
Plastic Pipe and Fittings	
Comco Inc Div of Enthone Inc	New Haven
Plastic Printing Plates	
Lockwood Sons Inc Wm H	Hartford
Plastic Wire Coating Materials	
Electronic Rubber Co	Stamford
Plastics	
R F Goodrich Sponge Products Division	Shelton
Naugatuck Chemical Division	United States
Rubber Co	Naugatuck (Adv.)

IT'S MADE IN CONNECTICUT

Plastics Machinery
Farrel-Birmingham Company Inc Ansonia

Plastics—Moulds & Dies
Crown Tool & Die Co Inc Bridgeport

Plasticrete Bloc
Plasticrete Corp Hamden

Platers
Acme Chromium Plating Co New Haven
Christie Plating Co Groton
Patent Button Co The Waterbury
Water Plating Company Waterbury
Chromium Process Company The (Chromium
Plating only) Shelton

Platers' Equipment
Apothecaries Hall Company Waterbury
Comco Inc Div of Enthone Inc New Haven
Lea Manufacturing Co The Waterbury
MacDermid Incorporated Waterbury

Platers Metal
Plume & Atwood Mfg Co The Thomaston

Plating
Christie Plating Co The (including lead plating)
Giering Metal Finishing Inc Groton
Superior Plating Co Hamden
Tec-Plate Inc Bridgeport
Windsor Locks

Plating Processes and Supplies
Enthone Inc New Haven
State Testing Laboratory Inc (plating
analyses) Bridgeport

Plumbers' Brass Goods
Bridgeport Brass Co Bridgeport
Keeney Mfg Co The (special bends) Newington
McGuire Mfg. Co. Waterbury
Scovill Manufacturing Company Waterbury 48

Plumbing Specialties
Risdon Manufacturing Co John M Russell Div
Naugatuck

Pole Line Hardware
Malleable Iron Fittings Co Branford

Police Equipment
The Smith-Worthington Saddlery Co Hartford

Polishing
Mirror Polishing & Buffing Co Waterbury

Postage Meters
Pitney Bowes Inc Stamford

Potentiometers—Electronic
Bristol Company The Waterbury

Precision Machine Tool Spindles
Whitton Manufacturing Co (for milling, grind-
ing, boring & drilling) Farmington

Precision Manufacturing
Hartford Machine Screw Co Div of
Standard Screw Co Hartford

Precision Revolving Machinery
Whitton Manufacturing Co Farmington

Precision Sheet Metal Fabrication
Milford Fabricating Co Milford

Precision Springs & Wire Forms
Rowley Spring Co Inc The Bristol

Premium Specialties
Waterbury Companies Inc Waterbury

Preservatives—Wood, Rope, Fabric
Darworth Incorporated ("Cuprinol") Simsbury
("Cellu-san")

Pressboard
Case & Risley Press Paper Co
(genuine) Oneco

Press Papers
Case Brothers Inc Manchester

Presses
Farrel-Birmingham Company Inc (Hydraulic)

Presses—Power
Pneumatic Applications Co The (modernization
of presses through conversion to Wichita Air
Clutch operation) Simsbury
Waterbury Farrel Foundry & Machine Co The
Waterbury

Pressure Vessels
Norwalk Tank Co Inc The (unfired to ASME
Code Par U 69-70) South Norwalk
Whitlock Manufacturing Co The Hartford

Printing
Allied Printing Services Inc Manchester
Bussmann Press Inc New Haven
Case Lockwood & Brainard A Division of Con-
necticut Printers Inc Hartford
Finlay Brothers Hartford
Heminway Corporation The Waterbury
Hildreth Press Bristol
Hunter Press Hartford
Lehman Brothers Inc New Haven
Taylor & Greenough Co The Wethersfield
T B Simonds Inc Hartford
A D Steinbach & Sons New Haven
The Walker-Rackliff Company New Haven

Printing Machinery
Banthin Engineering Co (automatic) Bridgeport

Printing Plates
Lockwood Sons Inc Wm H Hartford

Printing Rollers
Chambers-Storck Company Inc The (engraved)
Norwich

Printing—Silk Screen
Ad-Craft Displays, Inc. Bloomfield

Production Control Equipment
Ripley Company Inc Middletown
Wassell Organization Inc Westport

Profilers
Pratt & Whitney Co Inc West Hartford

Propellers—Aircraft
Hamilton Standard Div United Aircraft Corp
(propellers and other aircraft equipment)
Windsor Locks

Protective Coatings
Bischoff Chemical Corporation (Peelable Plastic
Coatings) Ivoryton
Harrison Company The A S (Waxes) South Norwalk

Publishers
O'Toole & Sons Inc The Stamford

Pumps
Sumo Pumps Inc (Deep-well electro-submer-
sible) Stamford
Yale & Towne Mfg Co The Stamford

Pumps—Small Industrial
Eastern Industries Inc New Haven

Punches
Hoggson & Pettis Mfg Co The (ticket & cloth)
141 Brewery St New Haven

Putty Softeners—Electrical
Fletcher Terry Co The Box 415 Forestville

Pyrometers
Bristol Co The (recording and controlling)
Waterbury

Radiation—Finned Copper
Bush Manufacturing Co West Hartford
G & O Manufacturing Company The New Haven
Vulcan Radiator Co The (steel and copper)
Hartford

Radiators—Engine Cooling
G & O Manufacturing Co New Haven

Ratchet Offset Screw Driver
Chapman Co J W Durham

Rayon Staple Fiber
Hartford Rayon Corp The Rocky Hill

Reamers
Atrax Company The (solid carbide) Newington
Pratt & Whitney Co Inc (All types) West Hartford

Record Equipment
Wassell Organization Inc (filing equipment)
Westport

Recorders
Bristol Co The (automatic controllers, tempera-
ture, pressure, flow, humidity) Waterbury

Reduction Gears
Farrel-Birmingham Company Inc Ansonia
Snow-Nabstedt Gear Corp The New Haven

Refractories
Howard Company New Haven
Mullite Works Refractories Div H K Porter
Co Inc Shelton

Refrigeration
Dunham-Bush Inc West Hartford

Regulators
Norwalk Valve Company (for gas and air)
South Norwalk

Research & Development
Raymond Engineering Laboratories
(Electro-Mechanical) Middletown
State Testing Laboratory Inc (chemical/physical
testing) Bridgeport

Resistance Wire
C O Jelliff Mfg Co The (nickel chromium, cop-
per nickel, iron chromium, aluminum)
Southport
Stamford

Respirators
American Optical Company Safety Products
Division Putnam

Resuscitators
Cycle-Flo Company The Milford

Retainers
Hartford Steel Ball Co The (bicycle & auto-
motive) Hartford

Rigid Plastic Sheet Material
Gilman Brothers Company The Gilman

Riveting Machines
Grant Mfg & Machine Co The Bridgeport
Linley Brothers Company Bridgeport
Ripley Company Inc Middletown
H P Townsend Manufacturing Co The
Elmwood

Rivets
Clark Brothers Bolt Co Milldale
Plume & Atwood Mfg Co The Thomaston
Raybestos Div of Raybestos-Manhattan Inc The
(brass and aluminum tubular and solid cop-
per) Bridgeport
Raybestos Div of Raybestos-Manhattan Inc The
(iron) Bridgeport

Rods
American Brass Company The (copper, brass,
bronze) Waterbury
Bridgeport Brass Company Bridgeport
Bristol Brass Corp The (brass and bronze) Bristol
Scovill Manufacturing Company (aluminum,
brass, bronze, etc.) Waterbury

Rollers—Bituminous Paving
Gabb Special Products Div E Horton & Son
Company Windsor Locks

Roller Skate Wheels
Raybestos Division of Raybestos-Manhattan Inc
Bridgeport

Roller Skates
Arms and Ammunition Div Olin Mathieson
Chemical Corp New Haven

Rolling Mills & Equipment
Farrel-Birmingham Company Inc Ansonia
Fenn Mfg Co The Newington
Precision Methods & Machines Inc Waterbury
Waterbury Farrel Foundry & Machine Co The
Waterbury

Rolls
Farrel-Birmingham Company Inc (Chilled and
Alloy Iron, Steel) Ansonia

Rotary Files
Atrax Company The (carbide) Newington

Routers
Atrax Company The (solid carbide) Newington

Rubber—Cellular
B F Goodrich Sponge Products Division Shelton

Rubber Cutting Machinery
Black Rock Mfg Company The Bridgeport

Rubber Chemicals
Naugatuck Chemical Division United States
Rubber Co Naugatuck
Stamford Rubber Supply Co The ("Factice")
Vulcanized Vegetable Oils Stamford

Rubberized Fabrics
Duro-Gloss Rubber Co The New Haven

Rubber Footwear
Goodyear Rubber Co The Middletown

Rubber Gloves
Seamless Rubber Company The New Haven

Rubber—Handmade Specialties
Seamless Rubber Company The New Haven

Rubber Latex Compounds and Dispersions
Naugatuck Chemical Division United States
Rubber Co (coating, impregnating and adhe-
sive compounds) Naugatuck
(Adv.)

IT'S MADE IN CONNECTICUT

Rubber Mill Machinery
Farrel-Birmingham Company Inc Ansonia

Rubber—Molded Specialties
Airex Rubber Prod Corp Portland
Bond Rubber Corporation Derby
Canfield Co The H O Bridgeport
Seamless Rubber Company The New Haven

Rubber Products
Airex Rubber Prod Corp Portland

Rubber Printing Plates
ADS Inc Div CSW Plastic Types Inc Hartford
Lockwood Sons Inc Wm H Hartford

Rubber Products—Mechanical
American Felt Co Glenville
Auburn Manufacturing Company The (washers, gaskets, molded parts) Middletown
Canfield Co The H O Bridgeport
Seamless Rubber Company The New Haven

Rubber—Reclaimed
Naugatuck Chemical Division United States Rubber Co Naugatuck

Rubbers
Naugatuck Chemical Div U S Rubber Co (synthetic rubbers and latex) Naugatuck

Rubbish Burners
John P Smith Co The New Haven

Rust Preventives
Anderson Oil Co Inc F E Portland
Enthone Inc New Haven

Rust Removers
Enthone Inc New Haven

Saddlery
The Smith-Worthington Saddlery Co Hartford

Safety Belts
Russell Mfg Co Middletown

Safety Clothing
American Optical Company Safety Products Division Putnam

Safety Fuses
Ensign-Bickford Co The (mining & detonating) Simsbury

Safety Gloves and Mittens
American Optical Company Safety Products Division Putnam

Safety Goggles
American Optical Company Safety Products Division Putnam

Safety Switches
Circuit Protective Devices Dept., General Electric Co. Plainville

Saw Blades—Hack
Capewell Mfg Co The Hartford
Thompson & Son Co The Henry G New Haven

Saw Blades—Hack & Band
Capewell Manufacturing Company Hartford

Saws, Band, Metal Cutting
Atlantic Saw Mfg Co New Haven
Capewell Manufacturing Co The Hartford
Thompson & Son Co The Henry G New Haven

Saws—Hole
Capewell Manufacturing Co The Hartford
Thompson & Son Co The Henry G New Haven

Scissors
Acme Shear Company The Bridgeport

Screens
Hartford Wire Works Co The (Windows, Doors and Porches) Hartford

Screw Caps
Weimann Bros Mfg Co The (small for bottles) Derby

Screw Machines
H P Townsend Mfg Company The Elmwood

Screw Machine Products
Accurate Screw Products Inc (B & S Swiss & Davenport) Southington
Apex Tool Co Inc The Bridgeport
Auto Electric Screw Machine Co Inc Bridgeport
Consolidated Industries West Cheshire
Eastern Machine Screw Corp The New Haven
Truman & Barclay Sls
Fairchild Screw Products Inc Winsted
Franklin Screw Machine Co The (up to 1 1/4" capacity) Hartford
Garthwait Mfg Co A E (up to and incl 1/4") Waterbury
Greist Mfg Co The (up to 1 1/4" capacity) New Haven
Hartford Machine Screw Co Div of Standard Screw Co (up to 5" capacity) Hartford
Horberg Grinding Industries Inc (heat treated and ground type only) 19 Staples Street Bridgeport

Screw Machine Products (Cont.)
Stanley Humason Inc Forestville
Independent Screw Machine Products (up to an incl 1 1/4" capacity) Hartford
Junior Screw Machine Products Inc West Haven
Lowe Mfg Co The Wethersfield
Main Screw Machine Products (davenport & automatics exclusively) Waterbury
National Automatic Products Company The Berlin
Nelson's Screw Machine Products Plantsville
New Britain Machine Company The New Britain
New Haven Screw Machine Prods Inc (up to 1 1/4" capacity) Milford
Newton Screw Machine Products Co Plainville
Olson Brothers Company (up to 3/4" capacity) Plainville
Olson & Sons R P Southington
Plume & Atwood Mfg Co The Thomaston
Scovill Manufacturing Company Waterbury 91
United Screw Machine Co Thomaston
Waterbury Machine Tools & Products Co (Brown & Sharpe and Davenport) Waterbury

Screw Machine Tools
American Cam Company Inc (Circular Form Tools) Hartford
Pratt & Whitney Co Inc (Reamers, Taps, Dies, Blades and Knurls) West Hartford
Somma Tool Co (precision circular form tools) Waterbury

Screws
Allen Manufacturing Company The Hartford
American Screw Company Willimantic
Atlantic Screw Works (wood) Hartford
Bristol Company The (socket set and socket cap screws) Waterbury
Clark Brothers Bolt Co Hartford
Hartford Machine Screw Co Div of Standard Screw Co Hartford
Holo-Krome Screw Corporation The (socket set and socket cap) West Hartford
Scovill Manufacturing Company Waterbury 91
Superior Manufacturing Co The Winsted

Screws—Socket
Allen Manufacturing Company The Hartford
Bristol Co The Waterbury
Hartford Machine Screw Co Div of Standard Screw Co Hartford
Holo-Krome Screw Corp The West Hartford

Sealing Tape Machines
Better Packages Inc ("Counterboy," "Tape-shooter," "Big Inch") Shelton
Derby Sealers Inc (gummed and pressure-sensitive tapes) Derby

Seals
Russell Mfg Co (for oven doors and fire bulkheads) Middletown

Service Entrance Equipment
Circuit Protective Devices Dept., General Electric Co. Plainville

Sewing Machines
Greist Mfg Co The (Sewing Machine attachments) 303 Blake St New Haven
Singer Manufacturing Company The (industrial) Bridgeport

Sharpeners
Gorn Electric Co Inc (electric knife and scissors) Stamford

Shaving Soaps
J B Williams Co The Glastonbury

Shears
Acme Shear Co The (household) Bridgeport

Sheet Metal Products
American Brass Co The (brass and copper) Waterbury
Merriam Mfg Co (security boxes, fitted tool boxes, tackle boxes, displays) Durham
Parsons Co Inc W A (fabricators) Durham
Plume & Atwood Mfg Co The Thomaston
United Manufacturing Co Division of The W L Maxson Corp Hamden

Sheet Metal Stampings
American Brass Company The Waterbury
American Buckle Co The West Haven
DooVal Tool & Mfg Inc The Naugatuck
J H Sessions & Son Bristol
Plume & Atwood Mfg Co The Thomaston
Scovill Manufacturing Company (aluminum, brass, bronze, copper, nickel silver, steel and other metals and alloys) Waterbury

Sheet Steel
Dolan Steel Company Inc Bridgeport

Shell Cores
Victors Brass Foundry Inc Guilford

Shell Molding
Victors Brass Foundry Inc Guilford

Shells
Scoville Manufacturing Company (aluminum, brass, bronze, copper, nickel silver—drawn, stamped—electric socket, screw) Waterbury
Wolcott Tool and Manufacturing Company Inc Waterbury

Showcase Lighting Equipment
Wiremold Company The Hartford

Signals
H C Cook Co The (for card files) Ansonia

Signs
Berger Sign Co (neon electric-porcelain enamel—stainless steel) Hartford
Ad-Craft Displays, Inc. (all types, quantity only) Bloomfield

Silk Screen Process Printing
Ad-Craft Displays, Inc. Bloomfield
Norton Co R H New Haven
Sirocco Screen prints New Haven
Stifel & Kuita Inc New Britain

Silk Screening on Metal
Ad-Craft Displays, Inc. Bloomfield
Merriam Mfg Co (Displays and Specialties, to order) Durham

Simulators
Reflectone Corporation The Stamford

Sintered Metal Products
Raybestos Division of Raybestos-Manhattan Inc Bridgeport

Sizing and Finishing Compounds
American Cyanamid Company Waterbury

Slide Fasteners
G E Prentice Mfg Co The Kensington
North & Judd Manufacturing Co New Britain
Scovill Manufacturing Company (GRIPPER zipper) Waterbury

Smoke Stacks
Bigelow Company The (steel) New Haven
Norwalk Tank Co The South Norwalk

Snap Fasteners
Scovill Manufacturing Company (GRIPPER snap fasteners) Waterbury

Soap
J B Williams Co The (industrial soaps, toilet soaps, shaving soaps) Glastonbury

Special Machinery
Banthin Engineering Company (complete and/or parts) Bridgeport
Black Rock Mfg Company The Bridgeport
Boesch Mfg Co Inc Danbury
Farrel-Birmingham Company Inc Ansonia
Federal Machine & Tool Co Bristol
Fenn Mfg Co The Newington
Hartford Special Machinery Co The Hartford
H P Townsend Mfg Company The Elmwood
National Sheradizing & Machine Co (mandrels & stock shells for rubber industry) Hartford
Swan Tool & Machine Co The Hartford
Tucker Machine Co North Haven

Special Parts
Fenn Mfg Co The Newington
Greist Mfg Co The (small machines, especially precision stampings) New Haven
J H Sessions & Son Bristol

Spinnings
Gray Manufacturing Company The Hartford

Spline Milling Machines
Townsend Mfg Co The H P Elmwood

Sponge Rubber
B F Goodrich Sponge Products Division Shelton

Spotwelding
Spotwelders Inc (aluminum, steel, magnesium, titanium & alloys) Stratford

Spray Painting Equipment and Supplies
Lea Manufacturing Co The Waterbury

Spring Coiling Machines
Torrington Manufacturing Co The Torrington

Spring Presses
Townsend Mfg Co The H P Elmwood

Spring Units
Owen Silent Spring Division American Chain & Cable Company Inc Bridgeport

Spring Washers
Barnes Co The Wallace Div Associated Spring Corp Bristol

Springs
Central Spring Co (Torsion and Double Torsion) Terryville

Springs—Coil & Flat
Barnes Co The Wallace Div Associated Spring Corp Bristol
Barrett Co William L. Bristol
Bristol Spring Manufacturing Co Plainville
Foursome Manufacturing Co Bristol
Stanley Humason Inc Forestville
Newcomb Spring Corp The Southington
New England Spring Manufacturing Company Unionville
Peck Spring Co The Plainville

Springs—Flat
Barnes Co The Wallace Div Associated Spring Corp Bristol
Bristol Spring Manufacturing Co Plainville
Foursome Manufacturing Co Bristol
Stanley Humason Inc Forestville
Peck Spring Co Plainville (Advt.)

I T ' S M A D E I N C O N N E C T I C U T

Springs—Wire
Banner Spring Corporation Hartford
Barnes Co The Wallace Div Associated Spring Corp Bristol
Bristol Spring Manufacturing Co Plainville
Colonial Spring Corporation The Hartford
Connecticut Spring Corporation The (compression, extension, torsion) Hartford
Foursome Manufacturing Co Bristol
Stanley Humason Inc Forestville
D R Templeman Co (coil and torsion) Plainville
Newcomb Spring Corp The Southington
Peck Spring Co Plainville

Springs, Wire & Flat
Peck Spring Co Plainville

Sprinklers
Scovill Manufacturing Company (GREEN SPOT) Waterbury

Stamped Metal Products
American Brass Company The Waterbury

Stampings
DooVal Tool & Mfg Co The Naugatuck
Foursome Manufacturing Co Bristol
Plume & Atwood Mfg Co The (small) Thomaston
Scovill Manufacturing Company aluminum, brass, bronze, copper, nickel silver, steel and other metals and alloys—automotive, electrical, radio, etc.—deep drawn, Waterbury
Stanley Pressed Metal New Britain

Stampings—Small
Acme Shear Co The Bridgeport
Barnes Co The Wallace Div Associated Spring Corp Bristol
Barrett Co William L Bristol
Bristol Spring Manufacturing Co Plainville
Greist Manufacturing Co The New Haven
Stanley Humason Inc Forestville
Wire Form Inc Milldale

Stamps
Hogson & Pettis Mfg Co The (steel) 141 Brewery St New Haven
Parker-Hartford Corporation (steel) Hartford

Stationary Specialties
American Brass Company The Waterbury

Steel Castings
Hartford Electric Steel Corp The (carbon, low alloy and stainless steel castings) Hartford
Malleable Iron Fittings Co Branford
Nutmeg Crucible Steel Co Branford

Steel—Cold Rolled Spring
Barnes Co The Wallace Div Associated Spring Corp Bristol
Detroit Steel Corporation Hamden

Steel—Cold Rolled Stainless
Ulbrich Stainless Steels Wallingford
Wallingford Steel Company Wallingford

Steel—Cold Rolled Strip
Detroit Steel Corporation Hamden
Stanley Works The New Britain

Steel—Cold Rolled Strip and Sheets
Detroit Steel Corporation New Haven
Wallingford Steel Company Wallingford

Steel Goods
Merriam Mfg Co (sheets products to order)

Steel—Ground Flat Stock
Thompson & Son Co The Henry G New Haven

Steel Rolling Rules
Waterbury Lock & Specialty Co The Milford

Steel Stamps
Cooney Engraving Co Branford

Steel Strapping
Stanley Works The New Britain

Stereotypes
New Haven Electrotype Div Electrographic Corp New Haven

Stop Clocks, Electric
H C Thompson Clock Co The Bristol

Storage Batteries
R A E Storage Battery Mfg Co Glastonbury

Straps, Leather
Auburn Manufacturing Company The (textile, industrial, skate, carriage) Middletown

Strip Steel
Dolan Steel Company Inc Bridgeport

Structural Mouldings
Leed Co The H A Hamden

Studio Couches
Waterbury Mattress Co Waterbury

Super Refractories
Mullite Works Refractories Div H K Porter Co Inc Shelton

Surface Metal Raceway & Fittings
Wiremold Company The Hartford

Surgical Dressings
Acme Cotton Products Co Inc East Killingly
Seamless Rubber Company The New Haven

Surgical Rubber Goods
Seamless Rubber Company The New Haven

Swaging Machinery
Fenn Mfg Co The Newington

Switchboards
Distribution Assemblies Department, General Electric Co Plainville

Switchboards Wire and Cables
Rockbestos Products Corp (asbestos insulated) New Haven

Switches—Electric
General Electric Company Bridgeport

Synthetic Fabrics
American Felt Co Glenville

Tabulating Equipment—Manual
Denominator Company Inc Woodbury
Veeder-Root Incorporated Hartford

Tanks
Acme Welding Div United Tool & Die Co West Hartford
Bigelow Company The (steel) New Haven
Consep Inc Div of Enthone Inc (steel, alloy and lined) New Haven
Connecticut Welders Inc (steel, alloy & lined) Wallingford
Norwalk Tank Co The South Norwalk
Rolock Inc (Alloy) Fairfield
Storts Welding Company (steel and alloy) Meriden

Tanks—Stainless Steel
Alsop Engineering Corporation Milldale

Tap Extractors
Walton Company The West Hartford

Tape
Russell Mfg Co (Glass Electrical Insulating Tapes, Glass Fabrics for Plastic Moulding) Middletown

Tapes—Industrial Pressure Sensitive
Seamless Rubber Company The New Haven

Tape Machines
Better Packages Inc (Manual and electric models for case taping) Shelton
Derby Sealers Inc (manual and electric models) Derby

Taps
Hanson-Whitney Company The Hartford
Pratt & Whitney Co Inc West Hartford

Tarred Lines
Brownell & Co Inc Moodus

Telemetering Instruments
Bristol Co The Waterbury

Television—Radio
Junior Screw Machine Products Inc West Haven

Testers—Insulation
McNeal J D New Haven

Testers—Insulation Wire & Cable
Davis Electric Company Wallingford

Testers—Nondestructive, Ultrasonic
Sperry Products Inc Danbury

Testing
State Testing Laboratory Inc (environmental, X-ray, tensile, bearings) Bridgeport

Textile Printing Gums
Polymer Industries Inc Springdale

Textile Processors
Amerbelle Corporation Rockville

Thermometers
Bristol Co The (recording and automatic control) Waterbury
Manning Maxwell & Moore Inc Stratford

Thin Gauge Metals
Plume & Atwood Mfg Co The Thomaston
Thingsheet Metals Co The (plain or tinned in rolls) Waterbury

Thread
American Thread Co The Willimantic
Belding Heminway Corticelli Putnam
Max Pollack & Co Inc Groton and Willimantic

Thread Chasers
Geometric Tool Division, Greenfield Tap & Die Corp New Haven

Thread Gages
Hanson-Whitney Company The Hartford
Pratt & Whitney Co Inc West Hartford

Thread Milling Machines
Hanson-Whitney Company The Hartford
Pratt & Whitney Co Inc West Hartford

Thread Rolling
Bland Burner Co The Thread Products Div Hartford

Thread Rolling Machinery
Hartford Special Machinery Co The Hartford
Mettler Machine Tool, Inc. New Haven

Threading Machines
Grant Mfg & Machine Co The (double end automatic) Bridgeport

Timers, Interval
A W Haydon Co The Waterbury
H C Thompson Clock Co The Bristol
Cramer Controls Corporation The Centerbrook
Rhodes Inc M H Hartford

Timing Devices
B & N Tool & Engineering Co (development and model work) Oakville
Cramer Controls Corporation The Centerbrook
A W Haydon Co The Waterbury
Lux Clock Manufacturing Company Waterbury
Rhodes Inc M H Hartford
Seth Thomas Clocks Thomaston
United States Time Corporation The Waterbury

Timing Devices & Time Switches
A W Haydon Co The Waterbury
Lux Clock Manufacturing Company Waterbury
M H Rhodes Inc Hartford

Tinning
Thinsheet Metals Co The (non-ferrous metals in rolls) Waterbury
Wilcox-Crittenden Div North & Judd Mfg Co Middletown

Tires
Armstrong Rubber Company The West Haven

Tokens
Scovill Manufacturing Company (bus, street car and subway fare) Waterbury

Tool Bits
Thompson & Son Co The Henry G New Haven

Tool Chests
Vanderman Manufacturing Co The Willimantic

Tool Hardening
Commercial Metal Treating Co Bridgeport

Tools
B & N Tool & Engineering Co (dies, jigs, fixtures, sub-press and progressive) Thomaston
Hogson & Pettis Mfg Co The (rubber workers) 141 Brewery St New Haven

Tools & Dies
Metropolitan Tool & Die Hartford
Moore Special Tool Co Bridgeport
Swan Tool & Machine Co The Hartford

Tools, Dies & Fixtures
Greist Mfg Co The New Haven

Tools, Dies, Jigs & Fixtures
Lyons Tool & Die (modelwork, jig boring) Meriden
Otterbein Co J A Middletown
Telke Tool & Die Mfg Co New Britain

Tools, Fixtures, Gauges
Fredericks Tool Co J F West Hartford

Toroidal Winding Machines
Boesch Mfg Co Inc Danbury

Totalizers
Reflectone Corporation The Stamford

Toys
Geo S Scott Mfg Co The Wallingford
Gilbert Co The A C New Haven
N N Hill Brass Co The East Hampton
Waterbury Companies Inc Waterbury

Transformers
Monarch Electric Co (Allis Chalmers) New Britain

Trucks—Commercial
Metropolitan Body Company (International Harvester truck chassis and "Metro" bodies) Bridgeport

Truck—Lift
Excelsior Hardware Co The Stamford

Trucks—Skid Platforms
Excelsior Hardware Co The (lift) Stamford

Tube Clips
H C Cook Co The (for collapsible tubes) 32 Beaver St Ansonia
Weimann Bros Mfg Co The (for collapsible tubes) Derby

Tube Fittings
Scovill Manufacturing Company (UNIFLARE flared tube and LOXIT compression tube) Waterbury

Tubers
Standard Machinery and Davis-Standard Divisions of Franklin Research Corp Mystic (Advt.)

IT'S MADE IN CONNECTICUT

Tubes—Collapsible Metal
Sheffield Tube Corp The New London

Tubing
American Brass Co The (brass and copper) Waterbury
Bridgeport Brass Company (brass and copper) Bridgeport
G & O Manufacturing Co (finned) New Haven
Scovill Manufacturing Company (Brass and Copper) Waterbury 91
Wallingford Steel Co The (stainless and super metals) Wallingford

Tubing—Flexible Metallic
American Brass Co Metal Hose Waterbury Branch

Tubing—Heat Exchanger
American Brass Company The Waterbury
Scovill Manufacturing Company Waterbury 91

Tumbling Barrels and Accessories
Wheeler Co G. E. New Haven

Tumbling Equipment & Supplies
Esbec Barrel Finishing Corp Byram

Tumbling Service
Esbec Barrel Finishing Corp Meriden

Turntables
Macton Machinery Company Inc (industrial & display) Stamford

Typewriters
Royal McBee Corp Hartford
Underwood Corporation Hartford

Typewriters—Portable
Royal McBee Corp Hartford
Underwood Corporation Hartford

Typewriter Ribbons and Supplies
Royal McBee Corp Hartford
Underwood Corporation Hartford and Bridgeport

Ultrasonic Processing Equipment
General Ultrasonics Co The Hartford

Underclearer Rolls
Sonoco Products Co (Climax-Lowell Div) Mystic

V-Belt Drives
Monarch Electric Co (Allis Chalmers) New Britain

Vacuum Bottles and Containers
American Thermos Products Co Norwich

Vacuum Cleaners
Electrolux Corporation Old Greenwich
Spencer Turbine Co The Hartford

Valves—Automobile Tire
Bridgeport Brass Company Bridgeport

Valves
Norwalk Valve Company (sensitive check valves) South Norwalk

Valves—Aircraft
Bridgeport Thermostat Div Robertshaw—Fulton Controls Co Milford

Valves—Radiator Air
Bridgeport Brass Company Bridgeport

Valves—Relief & Control
Beaton & Caldwell Mfg Co New Britain

Valves—Safety & Relief
Manning Maxwell & Moore Inc Stratford

Vanity Boxes
Bridgeport Metal Goods Mfg Co Bridgeport
Plume & Atwood Manufacturing Co Thomaston
Scovill Manufacturing Company Waterbury

Varnishes
Staminit Corp The New Haven

Velvets
American Velvet Co (owned and operated by A Wimpfheimer & Bros Inc) Stonington
Leiss Velvet Mfg Co Inc The Willimantic

Venetian Blinds
Findell Manufacturing Company Manchester
Jennings Company The S Barry New Haven

Ventilating Systems
Colonial Blower Company Plainville

Vertical Shapers
Pratt & Whitney Co Inc West Hartford

Vibrators—Pneumatic
Branford Co The (industrial) New Haven

Vinyl Extrusion & Moulding Compounds
Electronic Rubber Co Stamford

Vises
Fenn Manufacturing Company The (Quick-Action Vises) Newington
Vanderman Manufacturing Co The (Combination Bench Pipe) Willimantic

Wall Paper
Stamford Wall Paper Co Inc Stamford

Washers
American Felt Co (felt) Glenville
Auburn Manufacturing Company The (all materials) Middletown
Clark Brothers Bolt Co Milldale
Humphrey Fabricating Corp Unionville
Plume & Atwood Mfg Co The (brass & copper) Thomaston
J H Rosenbeck Inc Torrington
Saling Manufacturing Company (made to order) Unionville

Washers—Felt
American Felt Co Glenville
Chas W House & Sons Inc (Mills & Cutting Plant) Unionville

Watches
E Ingraham Co The Bristol
United States Time Corporation The Waterbury

Water Deionizers
Penfield Mfg Co Meriden

Water Heaters
Whitlock Manufacturing Co The (instantaneous & Storage) Hartford

Water Heaters—Electric
Bauer & Company Inc Hartford

Water Heaters—Gas or Kerosene
Holyoke Heater Corp of Conn Inc Hartford

Waxes
Harrison Company The A S (and other protective coatings) South Norwalk

Waxes—Floor
Fuller Brush Co The Hartford

Webbing
Russell Mfg Co (Webbing for Safety Seat Belts—all types of webbing) Middletown

Wedges
Saling Manufacturing Company (hammer & axe) Unionville

Welded Products
Acme Welding Div United Tool & Die Co West Hartford

Welding
Aircraft Welding & Mfg Co Inc (aluminum, stainless steel, magnesium) Hartford
Connecticut Welders Inc (fabrication & repairs) Wallingford
Farrel-Birmingham Company Inc Ansonia
G E Wheeler Company (Fabrication of Steel & Non-Ferrous Metals) New Haven
Industrial Welding Company (Equipment Manufacturers—Steel Fabricators) Hartford

Welding—Lead
Connecticut Welders Inc (tanks & coils) Wallingford
Storts Welding Company (tanks and fabrication) Meriden

Welding Rods
American Brass Company The Waterbury
Bridgeport Brass Company Bridgeport
Bristol Brass Co The (brass & bronze) Bristol

Wells
Church Co The Stephen B Seymour

Wicks
American Felt Co Glenville
Auburn Manufacturing Company The (felt, asbestos) Middletown
Holyoke Heater Corp of Conn Inc Hartford

Wiffle Ball
Wiffle Ball Inc The New Haven

Window & Door Guards
Hartford Wire Works Co The Hartford
Smith Co The John P New Haven

Wire
American Brass Company The Waterbury
Atlantic Wire Co The (steel) Branford
Bartlett Hair Spring Wire Co The North Haven

Wire
Bridgeport Brass Company (brass and silicon bronze) Bridgeport
Bristol Brass Corp The (brass & bronze) Bristol
Driscoll Wire Co The (steel) Shelton
Hudson Wire Co Winsted Div (insulated & enameled magnet) Winsted
Platt Bros & Co The (zinc wire) Winsted
P O Box 1030 Waterbury
Plume & Atwood Mfg Co The (brass, bronze, nickel silver) Thomaston
Scovill Manufacturing Company (Brass, Bronze and Nickel Silver) Waterbury 91

Wire and Cable
Continental Wire Corp (for industrial and military applications) Wallingford
General Electric Company (for residential, commercial and industrial applications) Bridgeport
Rockbestos Products Corporation (all asbestos, mining, shipboard and appliance applications) New Haven

Wire Arches & Trellises
Hartford Wire Works Co The Hartford
John P Smith Co The (all materials) New Haven
423-33 Chapel St

Wire Baskets
Wiretex Mfg Inc (Industrial, for acid, heat, treating and degreasing) Bridgeport

Wire Cloth
Hartford Wire Works Co The Hartford
C O Jeliff Mfg Co The (all metal, all meshes) New Haven

Wire Cloth Co Inc
Pequot Wire Cloth Co Inc Southport
Roloek Inc (Alloy) Norwalk
Smith Co The John P Fairfield
New Haven

Wire Dipping Baskets
Hartford Wire Works Co The Hartford
John P Smith Co The (all materials) New Haven
423-33 Chapel St

Wire Drawing Dies
Waterbury Wire Die Co The Waterbury

Wire Forming Machinery
Nilson Machine Company The A H Shelton
Torrington Manufacturing Company The Torrington

Wire Formings
G E Prentice Mfg Co The Kensington
Master Engineering Company West Cheshire
North & Judd Manufacturing Co New Britain
Peck Spring Co Plainville
Turner & Seymour Manufacturing Co The Torrington
Essex

Wire Forms
Banner Spring Corporation Hartford
Barnes Co The Wallace Div Associated Spring Corp Bristol
Bristol Spring Manufacturing Co Plainville
Central Spring Co (short run orders)

Wire Goods
Colonial Spring Corporation The Hartford
Connecticut Spring Corporation The Hartford
Foursome Manufacturing Co Bristol
Gemco Manufacturing Co Inc Southington
Stanley Humason Inc Forestville
New England Spring Mfg Co Unionville
Peck Spring Co Plainville
Templeman Co D R Plainville
Terryville Manufacturing Co Terryville
Wire Form Inc Milldale

Wire Goods
American Buckle Co The (overall trimmings) West Haven
Patent Button Co The Waterbury
Scovill Manufacturing Company (To Order) Waterbury 91

Wire Partitions
Hartford Wire Works Co The Hartford
John P Smith Co The (all materials) New Haven
423-33 Chapel St

Wire Products
Stanley Humason Inc Forestville
Peck Spring Co Plainville
Plume & Atwood Mfg Co The (to order) Thomaston

Wire Reels
Mettler Machine Tool, Inc. New Haven
Nilson Machine Company The A H Shelton

Wire Rings
American Buckle Co The (pan handles and tinners' trimmings) West Haven
Stanley Humason Inc Forestville
Peck Spring Co Plainville
Templeman Co D R Plainville

Wire—Specialties
Andrew B Hendryx Co The New Haven

Wire Straightening and Cutting Machinery
Mettler Machine Tool, Inc. New Haven

Wiring Devices
Harvey Hubbell Inc Bridgeport

Wood Scrapers
Fletcher-Terry Co The Forestville

Woodwork
C H Dresser & Sons Inc (Mfg all kinds of woodwork) Hartford
Hartford Builders Finish Co Hartford

Woven Felts—Wool
Chas W House & Sons Inc (Mills & Cutting Plant) Unionville

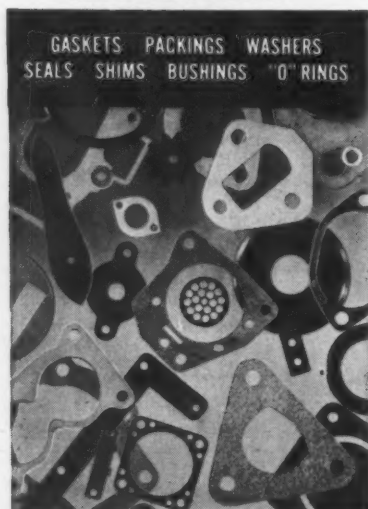
Yarns
Aldon Spinning Mills Corporation The (fine-woolen and specialty) Talcottville
Ensign-Bickford Co The (jute-carpet) Simsbury
Hartford Spinning Incorporated (Woolen, knitting and weaving yarns) Unionville

Zinc
Platt Bros & Co The (ribbon, strip and wire) P O Box 1030 Waterbury

Zinc Castings
Newton-New Haven Co Inc 688 Third Ave West Haven

Zinc Die Castings
Mt Vernon Die Casting Corporation Stamford (Advt.)

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Accounting Hints

(Continued from page 61)

latest estimate of any significant organization changes, not reflected in the budget for the remaining period.

INVESTMENT INCOME. Learn from the treasurer the latest estimate of dividends and interest, income and capital gains or losses.

CONTINGENCY PROVISIONS. See company officer about contingency provisions which in most companies includes Bonus Plans, etc., usually not determined until late in the year.

Now, let's assume that we have obtained the best thinking of all concerned and put it together like this in four columns:

1	2	3	4
Actual Year to Date	Budget Remaining Quarter	Additional Income and Expense	Projected Income for the year

It is now evident that this not only results in a projected income amount but the third column summarizes the expected budget variances and problems for the remaining period; all of which should be explained to the satisfaction of top management. This explanation may be best presented in commentary form by the controller as a regular monthly report, thus becoming a summary of the commitments made by each member of the management team that help to bring goals, alternatives, etc. into sharp focus.

Projection vs. Actual

The following check list is helpful to the accountant as he co-ordinates the final quarter adjustments, most of which require management decisions and could cause a wide difference between actual and projected results:

1. Cost or market adjustment. 2. Obsolete or slow-moving inventory adjustment. 3. Pension costs adjustment. 4. LIFO adjustment. 5. Tax accruals. 6. Depreciation adjustment. 7. Vacation accrual adjustment. 8. Charitable contributions. 9. Bonus or profit sharing plans.

It is a good practice to chart the monthly projected profit to demonstrate major changes that occur month-to-month during the year. Significant differences between actual and anticipated results should be explained for each item on the income statement. The eventual aim is to make these differences so minor that management will come to rely on the fortuneteller's reports as much as they do on the historian's.

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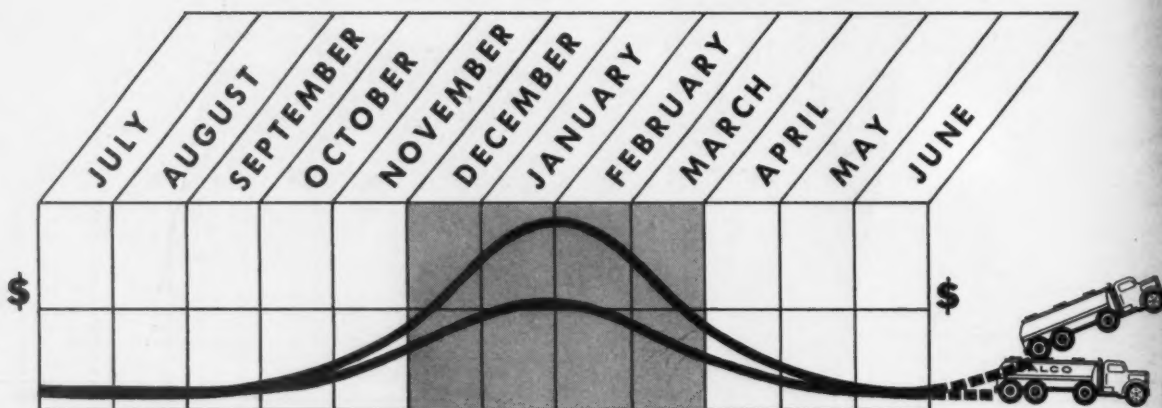
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